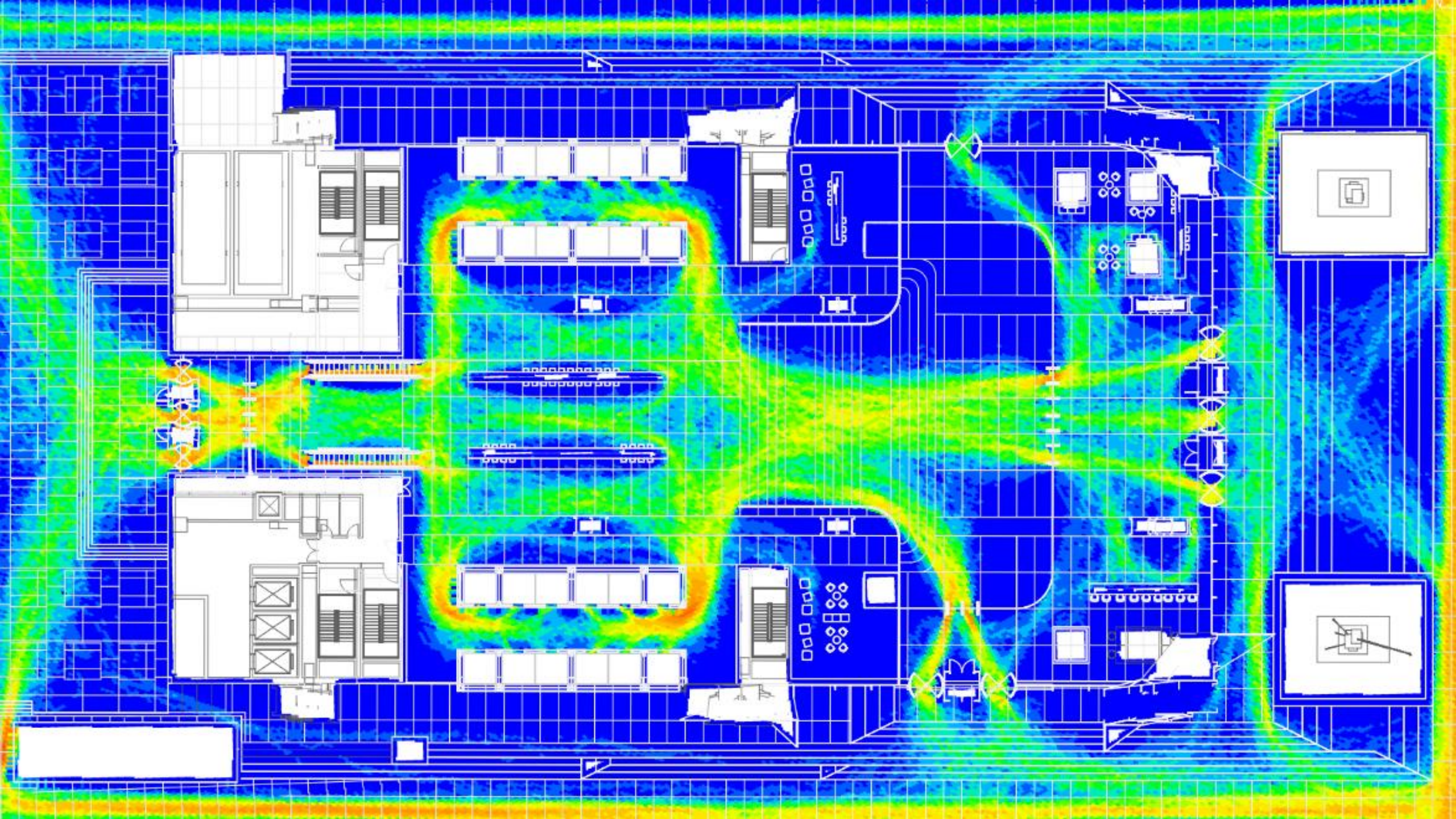
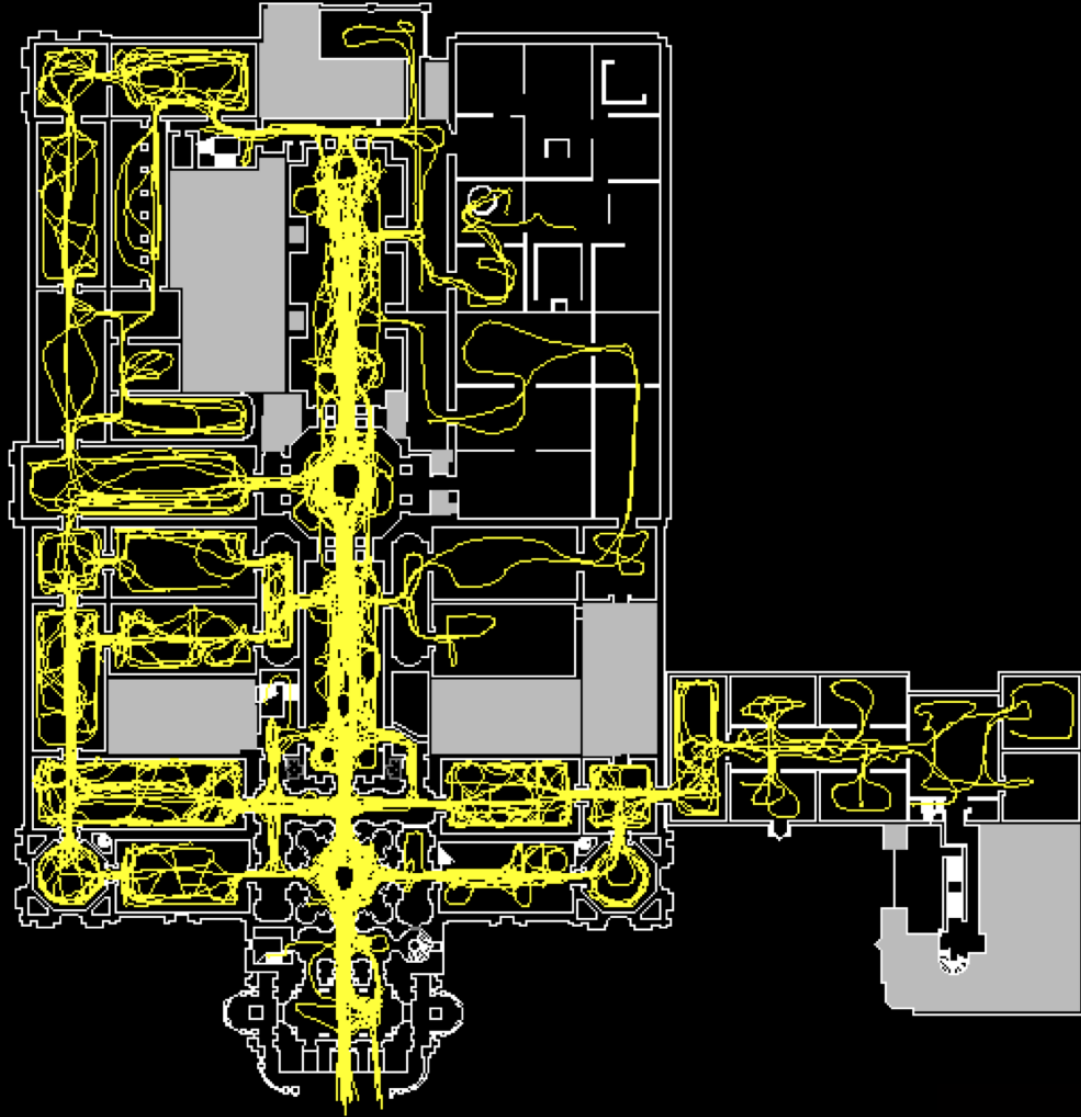




Buildings & estates



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Contact us

81 Rivington St
London
EC2A 3AY

+44 20 7400 1320

london@spacesyntax.com
www.spacesyntax.com

Introduction | Buildings & estates

Building layout design strategies to optimise organisational performance & elevate user satisfaction.

We advise owners, asset managers and design teams, demonstrating how the spatial layout of buildings interacts with functional programming to influence user behaviour, operational effectiveness and investment return.

Acting across a wide range of sectors - from retail stores, museums and galleries to research departments, parliamentary offices and passenger terminals - we put people at the heart of the design process, helping to create places that truly work for their occupants.

Our spatial intelligence approach

We provide expert advice in the following key areas:

Appraisal & benchmarking

Strategic design

Performance forecasting.

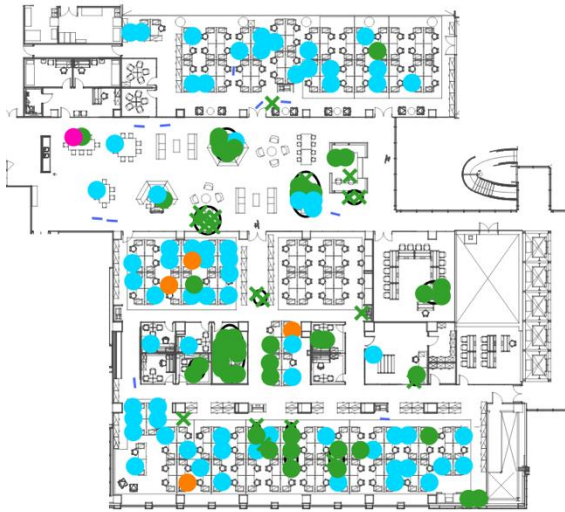


Approach | Appraisal & benchmarking

We analyse existing buildings to assess current performance & establish realistic design targets.

User behaviour analysis

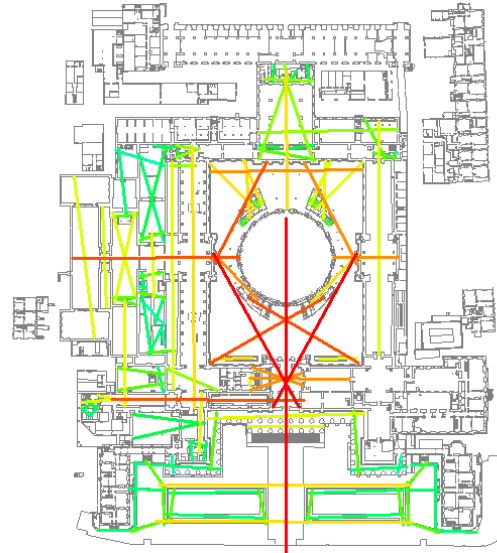
We survey existing patterns of movement and interaction, recording current user flows, congestion hotspots and underused areas. We cross-match this with sales, safety and other building performance data.



We conduct user behaviour and spatial layout modelling to provide benchmarked evidence for brief-writing and design development.

Spatial layout modelling

We evaluate the spatial layout of buildings, using advanced modelling techniques to explain existing user behaviours and reveal potentials for improvement. We benchmark spatial layouts against international exemplars.



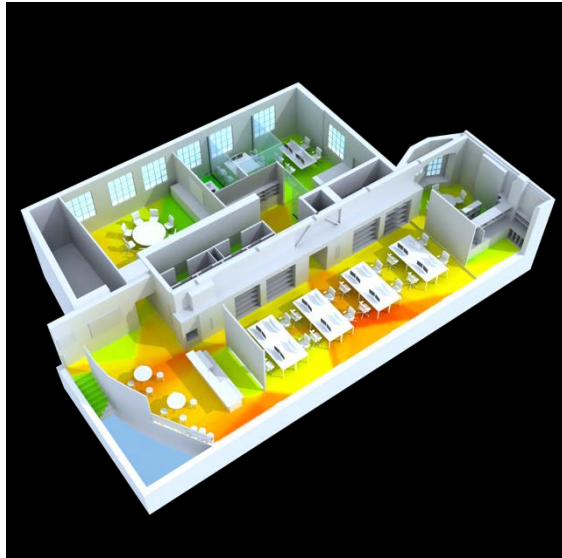
Approach | Strategic planning & design

We optimise human performance through targeted spatial layout design advice.

Data-driven planning and design strategies that inspire audiences and optimise performance outcomes. We create vision-led concepts, from strategic designs to detailed floorplate layouts.

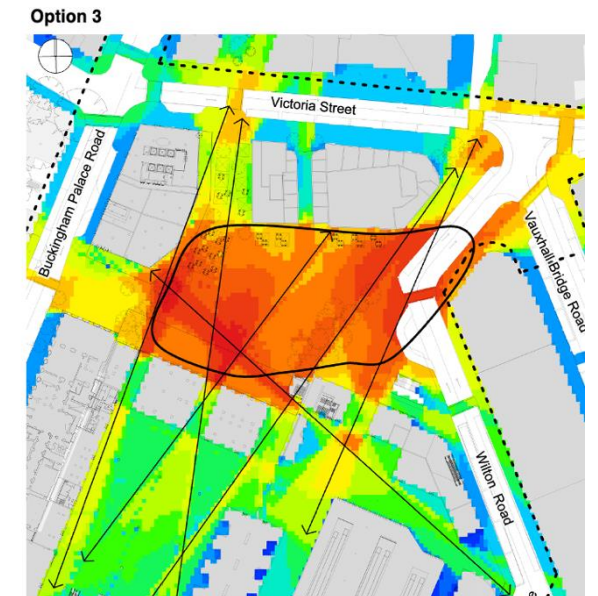
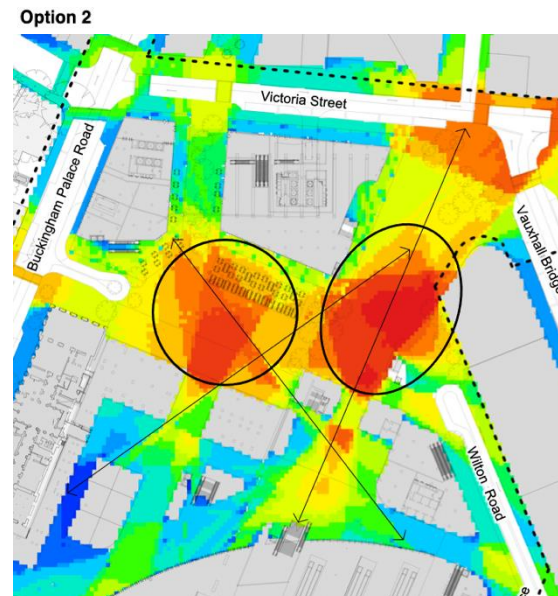
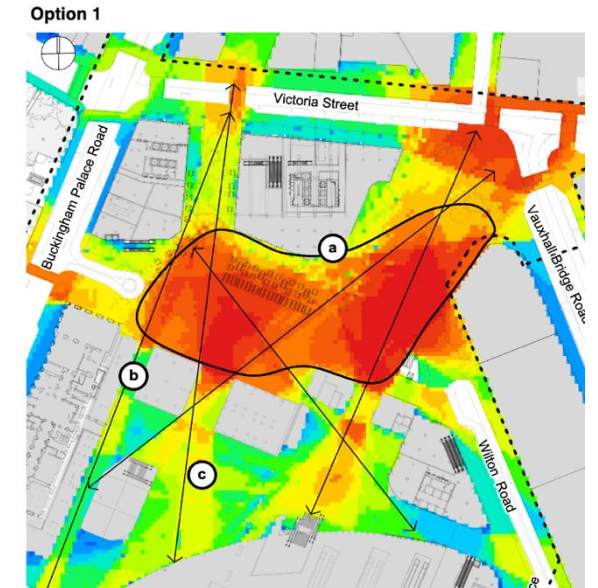
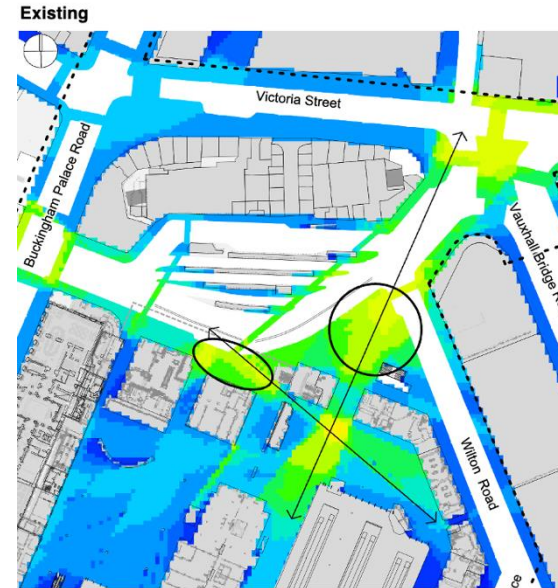
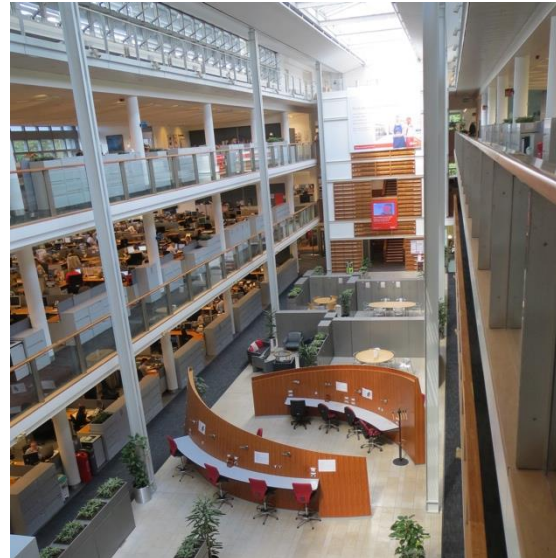
Design development

We work throughout the design process from initial strategy to detailed space-planning. We analyse proposed designs to forecast how people are likely to move through them, testing and refining options.



Functional performance

We identify the locations that are best suited to specific uses, ensuring that activities are in the places that best support them. We use targeted spatial layout design to enhance functional performance.

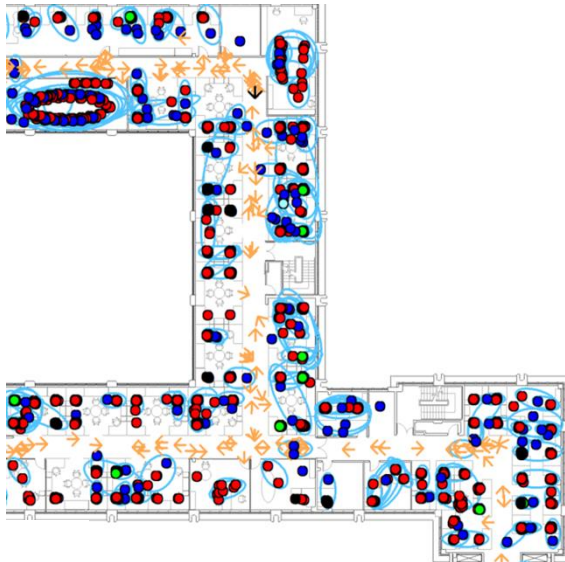


Approach | Performance forecasting

We measurably improve the performance of buildings & estates, enhancing user experience & increasing value to owners.

User behaviour

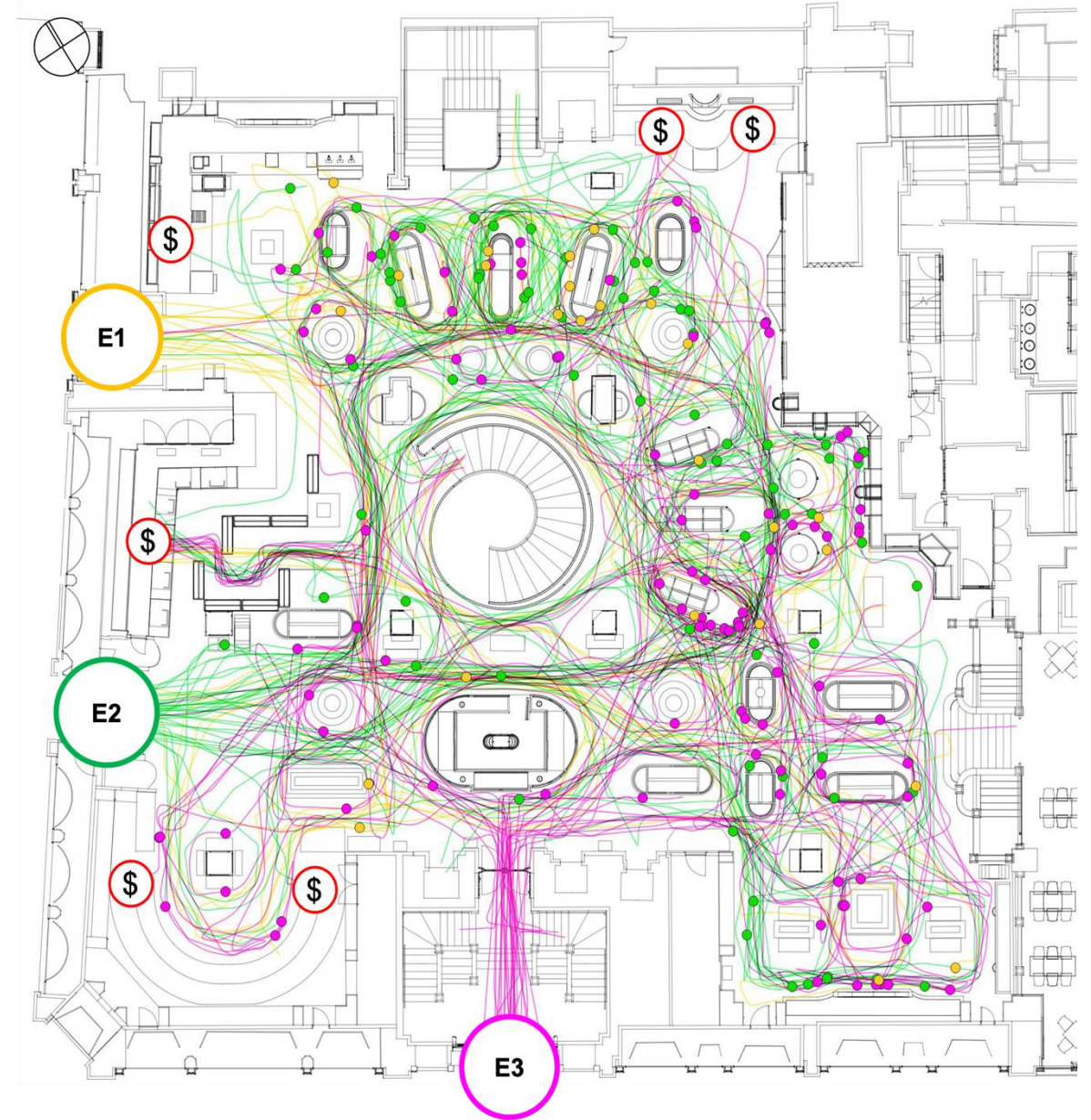
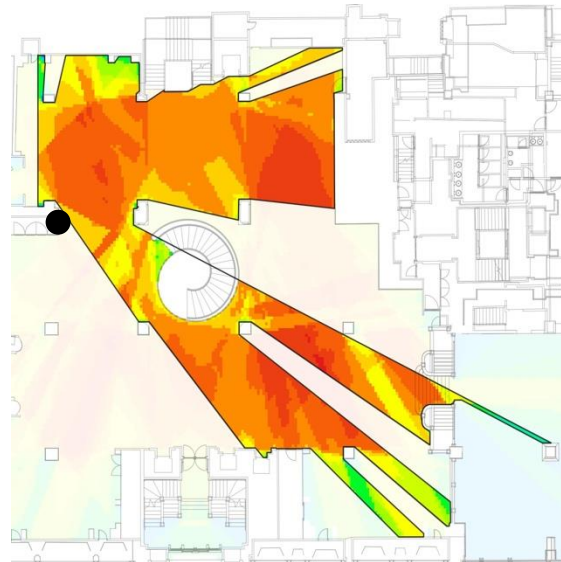
We generate data-driven insights on future user experience patterns. We forecast space-use patterns, flow densities, ease of wayfinding and human/object interactions.



We provide predictive modelling of user flows and interactions to support development appraisals, augment planning applications, facilitate negotiations and aid decision-taking.

Spatial layout

We demonstrate how proposed spatial layout designs will support individual user needs and deliver operational objectives. We provide comparative appraisals to assist in client selection.



Asset class | **Transport**

Asset class | **Transport**

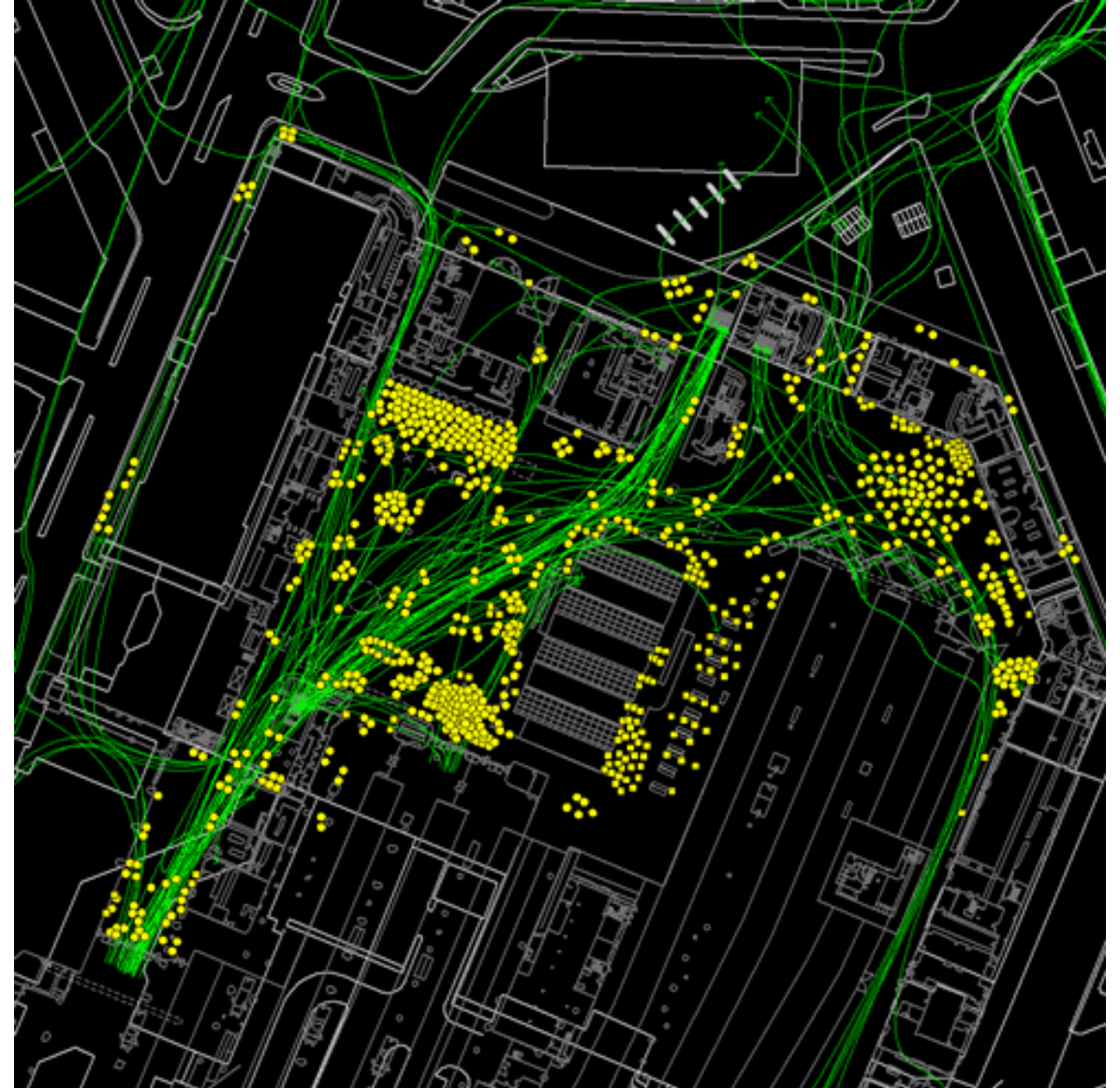
Crafting safe & convenient passenger journeys inside transport buildings & into their wider urban settings.

Our focus

- Passenger arrival, departure & interchange patterns
- Pedestrian movement, capacity & comfort under peak & off-peak conditions
- Integration of station activity patterns & surrounding urban movement networks
- Hierarchy of entrances, concourses & routes
- Design of concourses & key public spaces.

Value

- Ensuring reliable & legible passenger movement across everyday & peak conditions
- Reducing operational pressure at entrances, concourses & interchange points
- Improving the commercial performance of retail & catering functions.



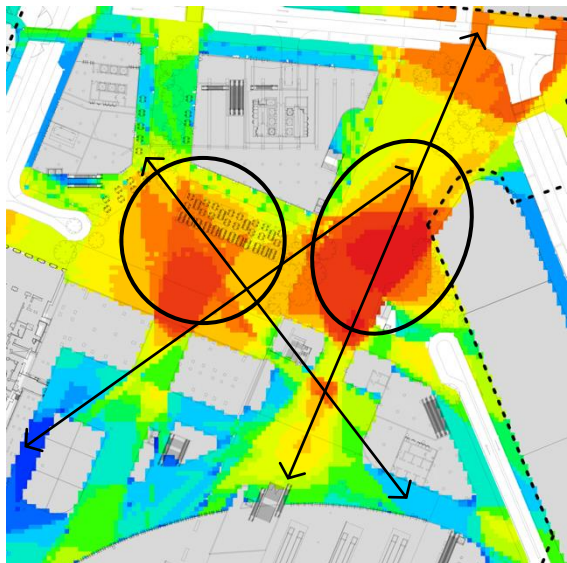
Observation study of existing passenger activity, Victoria Station, London.

Transport | Selected projects

Victoria Station Redevelopment | Certo

Feasibility study for the redevelopment of Victoria Station

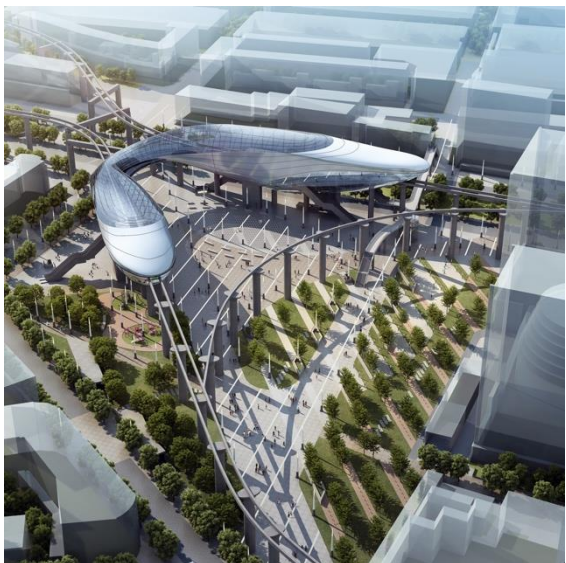
Analysis of passenger circulation to test strategies that enhance connectivity & legibility to inform future redevelopment scenarios for the station.



Jilin Lightrail Corridor and Stations | Jilin Municipality

Transport planning & urban development strategy

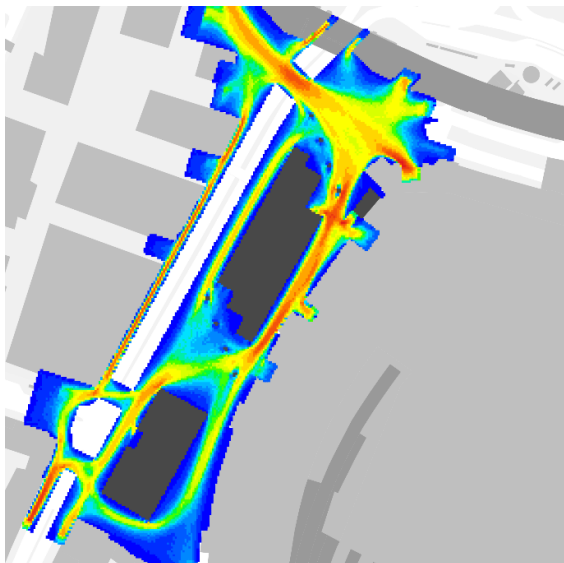
Optimising station placement & creating connected public spaces for vibrant, accessible urban mobility.



Elizabeth House | HB Reavis

Commercial building redesign & rail station connectivity

Impact assessment of an office building at Waterloo Station in London, using agent-based modelling to forecast pedestrian movement patterns around the building & into the station.



Cardiff Central Station | Network Rail

Design evaluation & movement forecasting

Construction of a Pedestrian Movement Forecast Model to evaluate design options for the comprehensive redevelopment of the station & its surroundings.



Case study | Jilin Lightrail Corridor Jilin, China



Optimising station placement & creating connected public spaces for vibrant, accessible urban mobility.

The opportunity

As the city of Jilin in north-east China experiences rapid urban expansion, the development of a world-class transit system is considered essential to avoid future car-dependence.

By running metro lines between areas currently separated by high volumes of vehicle traffic, the aim is to activate underutilised spaces, boost active mobility and facilitate the integration of isolated neighbourhoods. Key to this is first, the precise location of metro stations and second, the design of the local areas around these stations, as to seamlessly integrate the new public transport infrastructure into existing as well as new urban centres. The design of high-quality public spaces around the stations provides the potentials to foster social interaction, enhance quality of life and attract property development interest.

Client

Jilin Rail Transit Construction Investment Co.

Year

2017

Role

Consultant & Designers

Key Features

Spatial analysis

Metro network alignment

Lightrail station design

Evidence-based design

Public space design

Pedestrian-focused design

Case study | Jilin Lightrail Corridor Jilin, China

Our contribution

Space Syntax was initially appointed to advise Jilin Rail Transit on the alignment of the proposed metro lines and the placement of individual stations. We undertook citywide spatial analysis to test proposed alignments, then optimised these to ensure access to those parts of the city with the greatest potentials for future urban activity.

Having done so, we were asked to prepare urban design concepts for several of the new stations. The locations selected cover both sensitive historic settings as well as currently under-developed future centres, the aim being to demonstrate a range of responses to different local conditions.

The outcome

The outcome of our work on the Jilin Metro project is a seamless integration of transportation and public space design that addresses both the functional and social needs of the city.

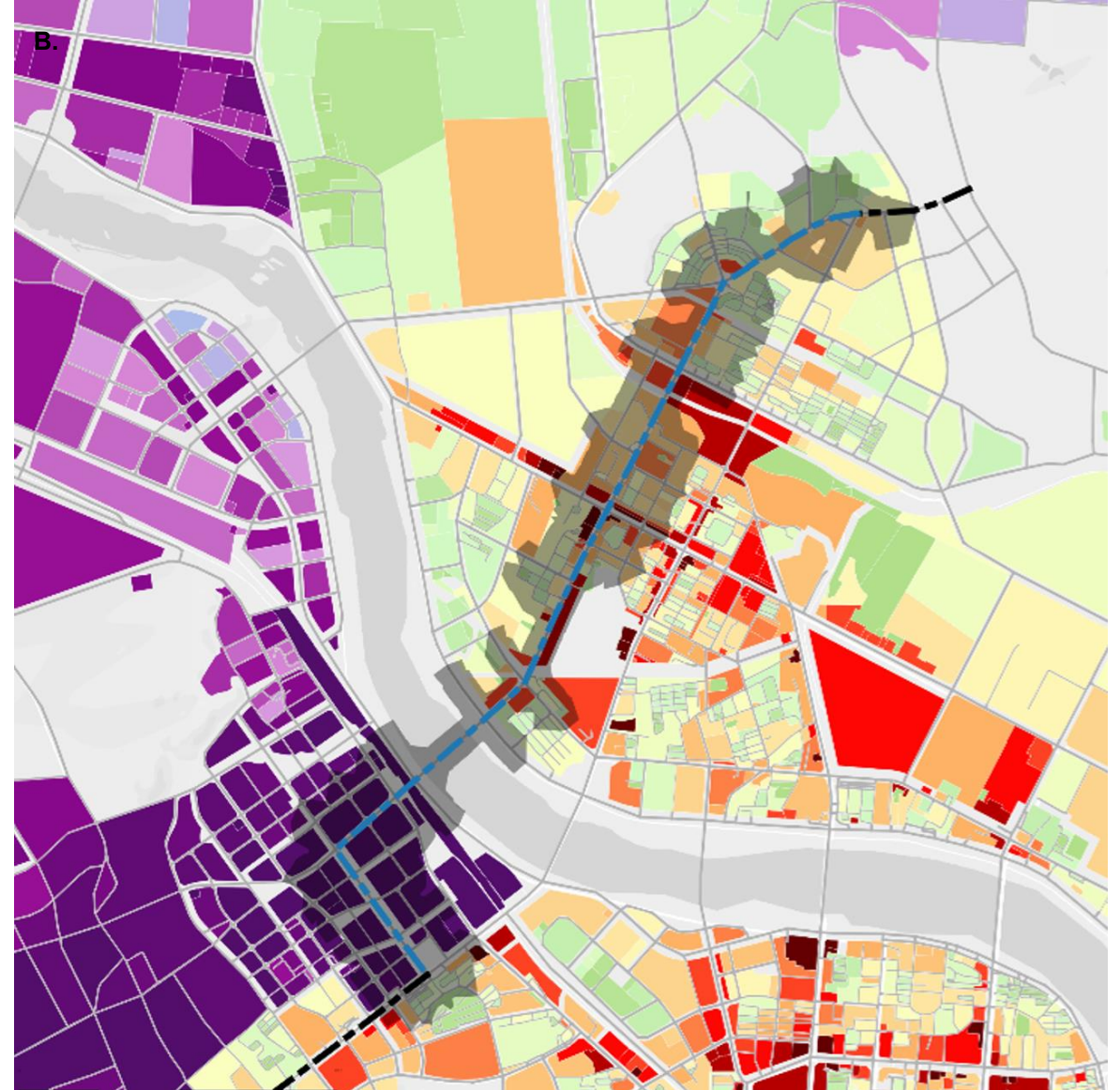
Our spatial analysis and evidence-based approach to station placement ensured that the metro network connects high-activity areas, supports sustainable urban growth, and facilitates easy access to key locations throughout Jilin.

The public spaces around the metro stations have been carefully designed to increase pedestrian movement, enhance social life and create vibrant local economies.

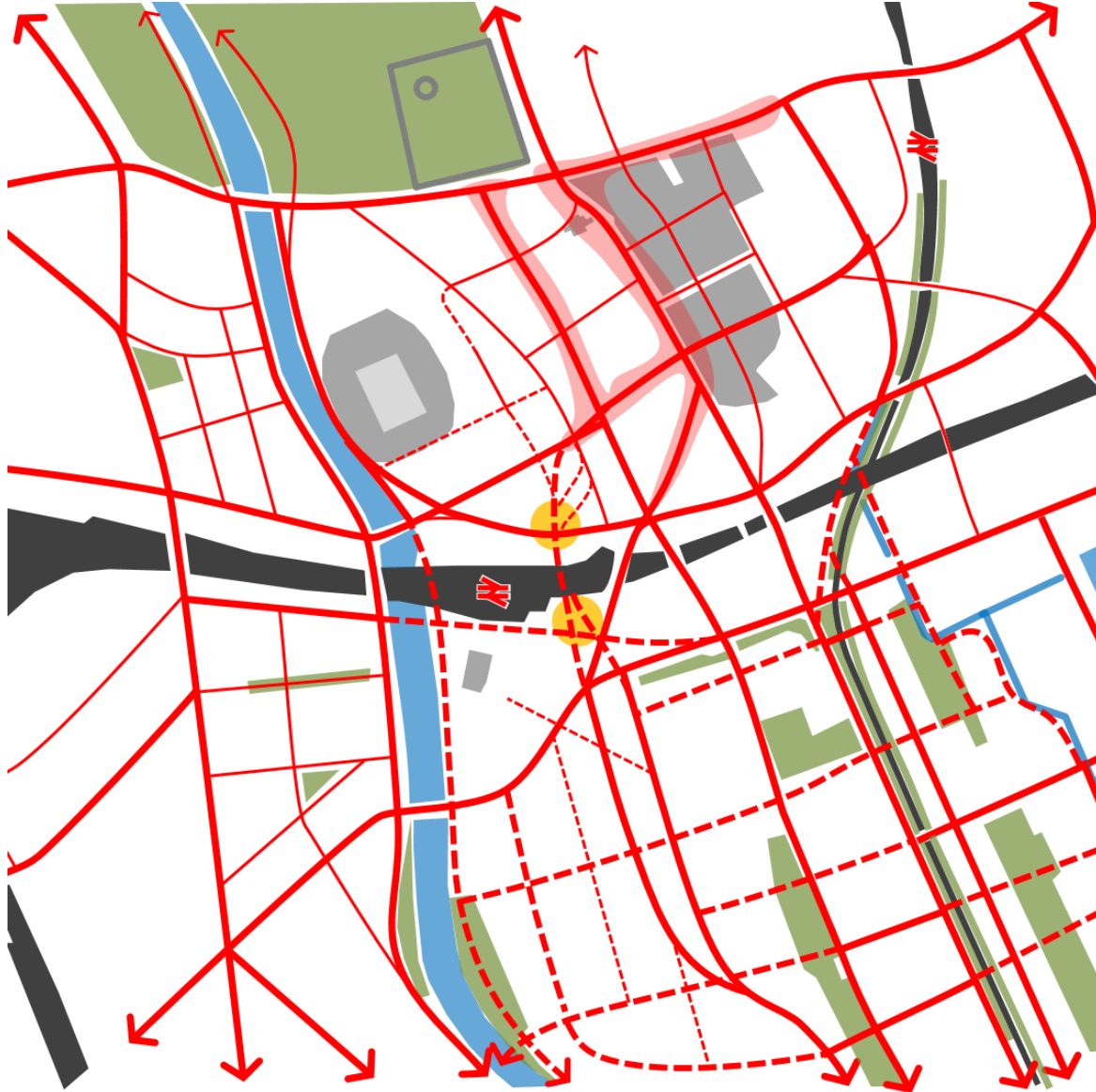
By strategically designing these public spaces to link separated neighbourhoods, the Jilin Metro project improves urban connectivity, reduces car-dependence and contributes to the city's long-term development as a modern metropolis.

A. Visualisation of a public space & metro station design (previous page).

B. Proposed metro alignment catchment overlaid on existing & proposed city spatial performance.



Case study | Cardiff Central Station Cardiff, UK



Construction of a Pedestrian Movement Forecast Model to evaluate design options for the comprehensive redevelopment of the station & its surroundings.

The opportunity

Cardiff Central Station is the main gateway to Cardiff. The local context of the station is currently constrained by the largely vehicle oriented road infrastructure, the railway infrastructure and the poor quality of the public realm.

Cardiff Central Masterplan represents an opportunity for Cardiff and the surrounding region to raise the profile of the area both within the UK and internationally.

The masterplan includes the BBC project with a Central Square to the north of the station, a new Arena and public sector offices to the south and a new public route through the Central Station.

In order to assess the impact on pedestrian movement patterns of the station masterplan and the future developments around it, Network Rail commissioned Space Syntax to develop a Predictive Movement Model and Forecast.

Client

Network Rail

Year

2015

Role

Strategic urban design advisor

Team

Powell Dobson Architects

Key Features

Urban Baseline Study

Design assessment & development

Pedestrian movement forecast

Case study | Cardiff Central Station Cardiff, UK

Our contribution

One of the unique inputs of Space Syntax was to provide contextual understanding of the site in terms of connectivity and movement potential. Firstly, our Spatial Accessibility Model of the existing network of Cardiff was used to analyse spatial opportunities and constraints of the site.

During the design development process, this model was used as a design tool to test the impact of spatial layout changes as a result of the emerging design options. This informed the design development and influenced strategic decisions by enabling an objective evaluation of proposed scenarios in terms of potential impact on movement patterns and activity potential.

Combined with land use, population and transport data, the Spatial Accessibility Model was used as the base for the Predictive Movement Model.

This was used in order to translate future changes in layout, quantum of development and station demand uplift into a Pedestrian Movement Forecast for the preferred masterplan option and its immediate context.

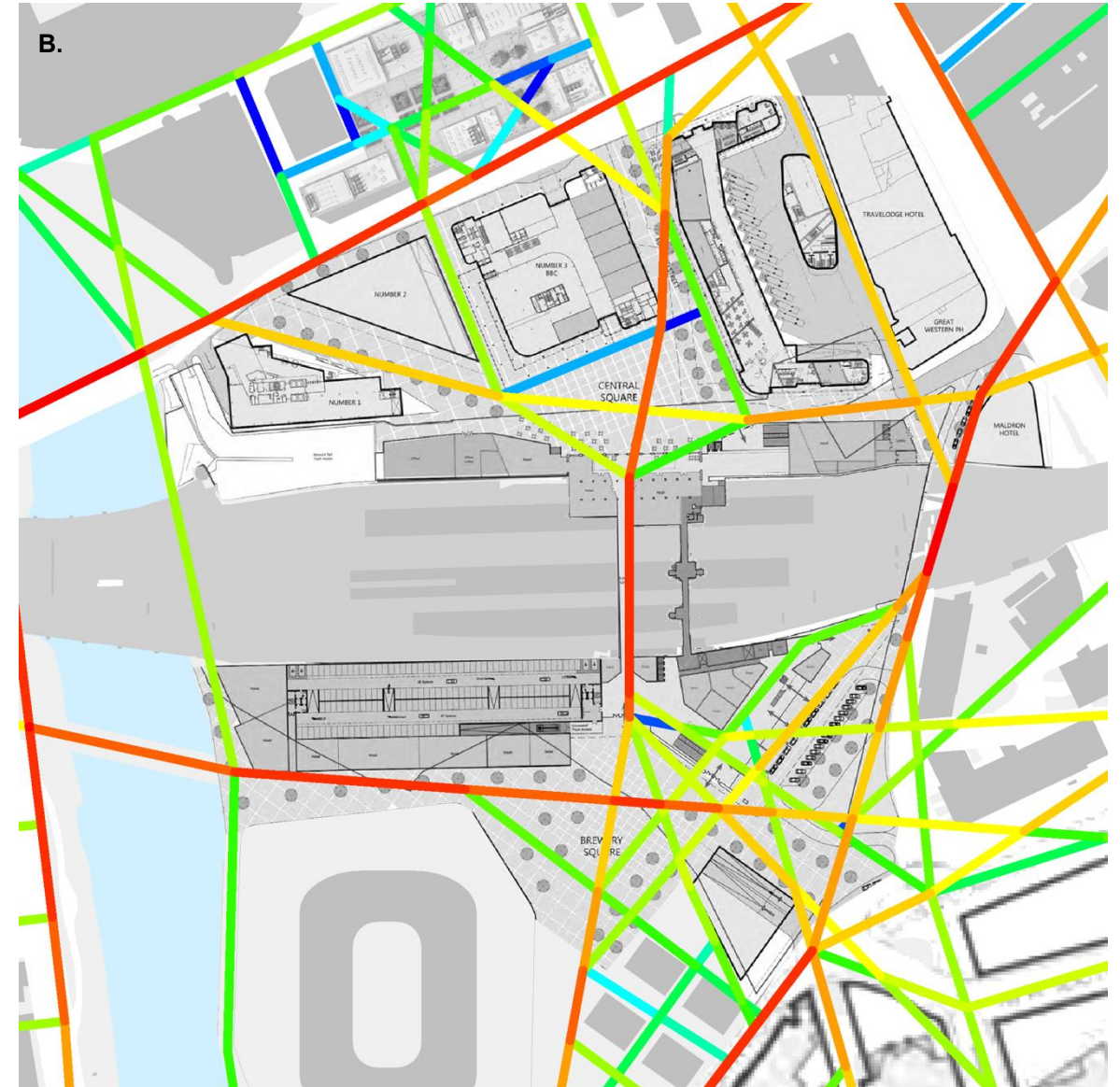
The outcome

The Spatial Accessibility Analysis highlighted the potential of the proposed public route to create a well-used north-south connection that would contribute to the overall improvement of connectivity in the area.

This was validated by the Pedestrian Movement Forecast for the future scenario.

A. The future developments around the station and the introduction of a public route through it creates an opportunity for enhancing the connectivity of the area and embedding the station into the wider movement network (previous page).

B. Spatial accessibility analysis of the proposed masterplan.



Asset class | **Mixed-use**

Asset class | **Mixed-use**

Ensuring development quality through the design of vibrant pedestrian routes & public spaces.

Our focus

- Pedestrian connectivity & public use
- Accessibility to local services, amenities & public transport options
- Hierarchy & diversity of public spaces
- Location of land uses according to differing footfall requirements
- Coexistence of active commercial uses with tranquil residential settings
- Arrangements of public & private spaces
- Changes in space use patterns across the day & throughout the week.

Value

- Creating liveable residential environments within active urban settings
- Reducing conflict between residents, visitors & different user groups
- Improving safety, comfort & privacy for residents & other users
- Contributing to & benefitting from the wider urban context.



Redevelopment of Television Centre London with new public realm and pedestrian access.

Mixed-Use | Selected projects

One New Change | Land Securities

Spatial layout design advice

Location analysis, spatial layout design advice and pedestrian movement forecasting, supporting retail strategy and planning negotiations.



Earl's Court | Capco

Evidence-based design advice

Strategic design advice and pedestrian movement forecasting to optimise the layout of the overall development and assist in the preparation of design briefs for individual neighbourhoods.



Rathbone Square | Great Portland Estates

Planning support related to urban & landscape design

Pedestrian movement and informal space use forecasting, informing discussions with future tenants and supporting planning negotiations.



Television Centre | Stanhope

Evidence-based design advice

Spatial layout design advice, including pedestrian movement modelling, to assist in the development of character areas and inform planning discussions.



Asset class | **Workplace**

Asset class | Workplace

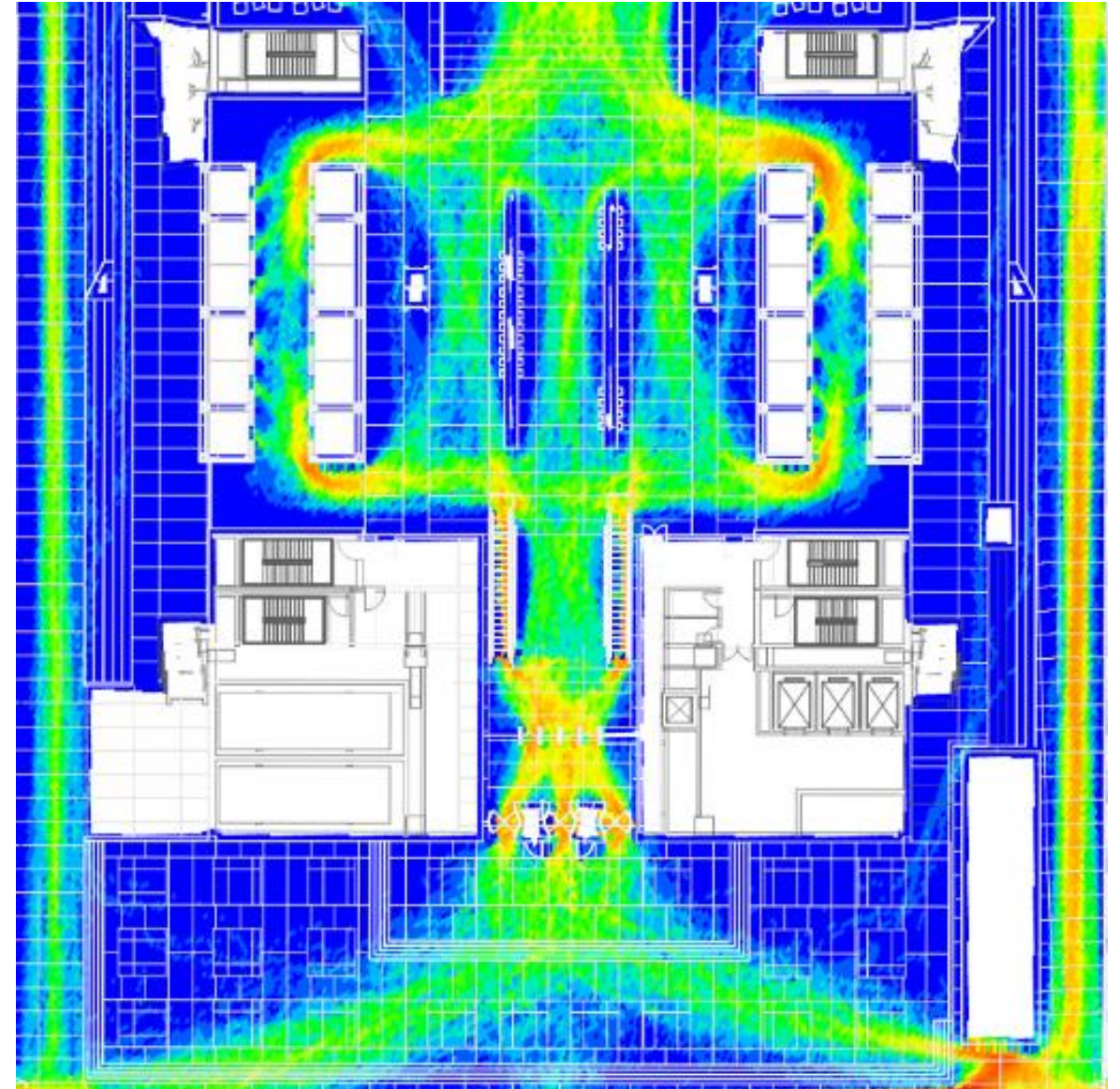
Using space to foster collaboration, innovation & productivity.

Our focus

- Movement & encounter patterns across teams
- Role of circulation & shared spaces
- Balance between interaction, privacy & concentration
- Relationship between layout & organisational structure.

Value

- Increasing innovation & knowledge exchange
- Aligning spatial layout with organisational culture
- Improving long-term adaptability of workplaces
- Supporting design decision-making through evidence-based insight.



User movement simulation of the lobby layout at 270 Park Avenue.

Workplace | Selected projects

Bloomberg Headquarters, London | Bloomberg

Urban integration & workplace design advice

Architectural and Urban design advice including pedestrian movement forecasting and ground floor activation. User circulation and interaction analysis, workplace, entrance and lobby design advice.



270 Park Avenue | JP Morgan Chase & Co

Building circulation, workplace & public realm design advice

Public realm and building circulation design advice ensuring the building and its surroundings work seamlessly to create a comfortable experience for both users and the local community.



22 Bishopsgate | Lipton Rogers Developments

Planning support related to urban & landscape design

Urban analysis and pedestrian and cycling movement forecasting, informing design development, stakeholder engagement and planning negotiations.



Francis Crick Institute | Francis Crick Institute

Space utilisation study & workplace design advice

Staff circulation, activity and occupancy patterns analysis and workplace design advice for the operations floor and central social space to enhance staff interaction and cross-department collaboration.



Case study | 270 Park Avenue New York, USA



Ensuring the seamless integration of the building & the wider city with a comfortable experience for both users & the local community.

Client

JP Morgan Chase & Co

Year

2019

Role

Spatial Strategy & Circulation Consultant

Team

Foster + Partners

Key Features

Strategic Design Advice

Visibility & Accessibility Analysis

User Movement Simulation & Forecasting

Entrance Demand Analysis

Common Spaces Capacity Assessments

The opportunity

Space Syntax supported Foster + Partners in the design of the new global headquarters for JP Morgan Chase & Co at 270 Park Avenue in Midtown Manhattan.

The design of the 60-storey tower was conceived to redefine the workplace experience by offering high-quality amenities within an innovative environment that encourages informal encounters, social interaction and communication. The aim in doing so is to enhance employee wellbeing and drive operational performance.

Space Syntax was appointed to provide strategic design advice on spatial layout and user activity both outside and inside the building. Our scope covered the new public space on Madison Avenue, the entrance lobby areas and the 'Exchange': four levels that include the lift transfer areas, a multi-level food hall and conference facilities.

With a building capacity of up to 14,000 employees, the study included a comprehensive analysis of movement patterns and space utilisation. These insights informed the design of circulation areas to ensure they accommodate key desire lines, anticipate demand and support different types of workplace activity.

Case study | 270 Park Avenue New York, USA

Our contribution

Our analysis began with an evaluation of the public realm and lobby design. Using existing urban movement data, turnstile records and projected trip generation for the new building, we assessed the key approaches to the building. We also established arrival/departure profiles for both employees and visitors and analysed the entrance demand during peak periods. Our insights created an early understanding of the building's likely impacts on surrounding movement patterns and helped make a key decision regarding the number and location of principal building entrances.

For the Exchange - the four levels that include the lift transfer areas, a multi-level food hall and conference facilities - we undertook spatial layout analysis of user wayfinding patterns, which informed the early-stage designs. An agent-based model was constructed for the public realm, lobby and the Exchange to simulate user movement and identify key desire lines, activity levels and potential congestion hotspots.

The outputs of this work included a detailed assessment of queuing capacity within the main circulation areas, including at entrances, security barriers, lift lobbies, transfer zones, escalators and reception areas. Based on the analysis, recommendations for design optimisations were provided to help the design team create a work environment that offers a high-quality user experience.

The outcome

Working closely with the design team, our analysis revealed opportunities and provided recommendations for layout and programme optimisation. This included feedback on the legibility of the circulation areas, refinement of the location of key functions such as security and catering, advice on the placement of interior design fixtures and optimisation of the location and design of vertical circulation elements, including internal staircases.

We also advised on the spatial layout and programmatic design of workspace areas in order for these to accommodate a wide variety of uses from quiet, focused work zones to informal meeting areas fostering unplanned encounters and social interactions.

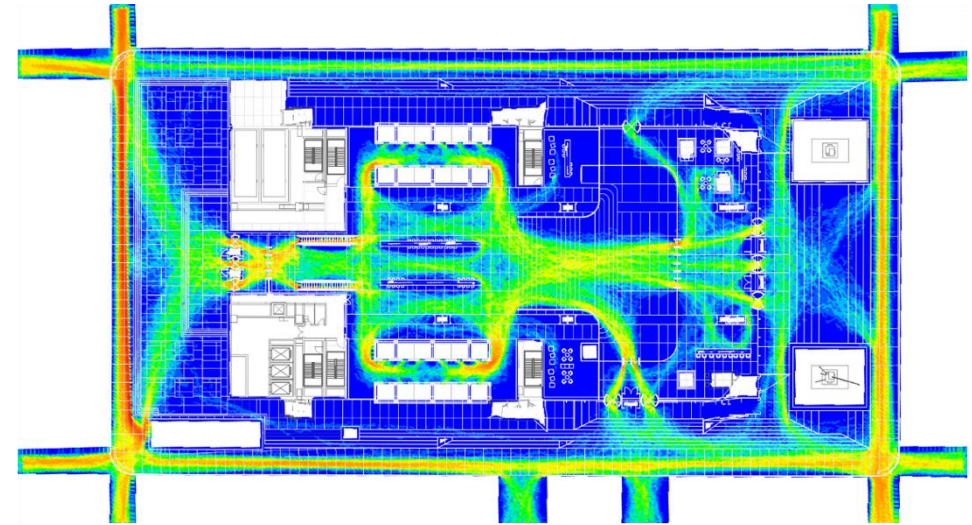
Our insights helped shape a workplace design that brings people together while supporting communication, productivity and wellbeing.

A. View of the lobby area, CGI © Foster + Partners (previous page).

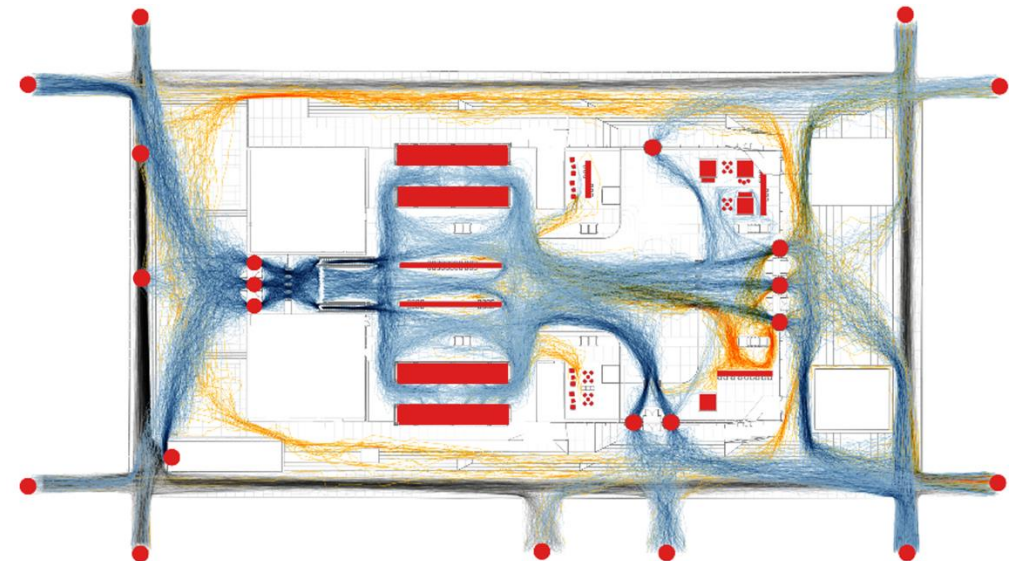
B. User movement simulation of the lobby layout, highlighting areas with highest density of movement.

C. Visualisation of circulation paths for different user groups, showing arrival patterns & entrance demands.

B.



C.



Case study | Bloomberg Headquarters London, UK



Advice on all aspects of design from urban integration, to workplace layout to user circulation.

The opportunity

Foster + Partners were appointed to design Bloomberg's European headquarters in the heart of the City of London.

Bloomberg's ambition was to create a workplace that fully realised the value of physical proximity — a building designed to maximise opportunities for interaction, collaboration and knowledge exchange, both within the organisation and in relation to the surrounding city.

Space Syntax was engaged to advise across multiple aspects of the design. Our role was to enhance the building's integration with its urban context while shaping an internal environment that carefully balanced vibrant, co-present spaces with quieter, focused settings essential for productive work.

Client

Bloomberg

Year

2011-12

Role

Strategic Design Advice

Team

Foster + Partners

Key Features

- Visibility & accessibility analysis
- User movement simulation & forecast
- Entrance demand analysis
- Design recommendations

Case study | Bloomberg Headquarters London, UK

Our contribution

Space Syntax undertook a series of studies at multiple scales, applying advanced spatial modelling and analytical techniques tailored to each design question.

At the urban scale, we analysed spatial network integration and pedestrian movement patterns to inform the building's relationship with the City. This supported the case for reinstating a historic Roman route that had been severed by 1960s office development.

At the building scale, we evaluated alternative footprint configurations to understand how variations in layout, floor plate geometry, void placement and service core positioning influenced visibility, movement flows and patterns of interaction. Multiple iterations were modelled and compared to support evidence-led decision making and the selection of a preferred option.

We also tested morning arrival sequences using agent-based simulations. These studies assessed proposals to route staff through shared social spaces, balancing the objective of encouraging interaction with user comfort, convenience and operational efficiency.

Finally, we modelled the capacity and performance of entrances, lobbies, security areas and lift waiting spaces under peak morning conditions, ensuring that the building would operate effectively during its most demanding periods.

The outcome

The completed design demonstrates how a workplace can be strategically shaped to maximise the benefits of co-location. The building fosters chance encounters, informal exchange and collective awareness, while providing a carefully calibrated range of quieter and more private environments to support diverse modes of work.

At the urban scale, the scheme makes a significant contribution to the City of London. The reinstated historic street alignment strengthens permeability and connectivity, while active frontages animate the surrounding public realm and create meaningful points of engagement between staff and the wider city.

The project has received multiple awards, including the RIBA Stirling Prize and the British Council for Offices 'Best of the Best', recognising both its architectural quality and its contribution to workplace innovation.

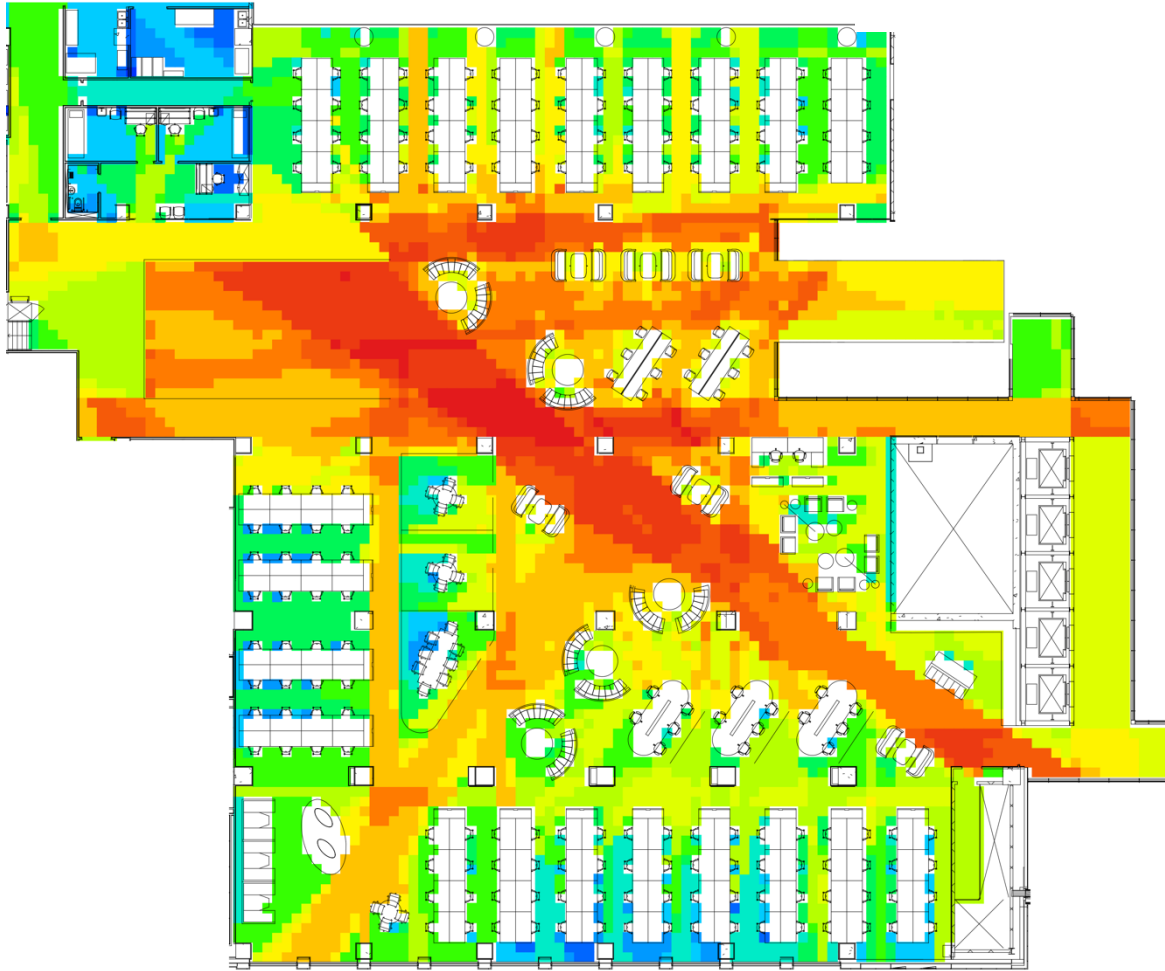
A. Bloomberg headquarters exterior (previous page).

B. Analysis of proposed floorplates to understand impact on visibility, co-presence and interaction.

C. Analysis of building footprint on site to study strength of connections, potential footfall and opportunities for active uses.



Case study | Francis Crick Institute London, UK



Enhancing staff interaction and cross-departmental collaboration through strategic design advice based on workplace behaviour surveys & spatial layout analysis.

The opportunity

The Francis Crick Institute is a world-leading biomedical research centre located in central London. Following an initial period of residence in the new building, the Operations team were looking to enhance their working environment by adapting the spatial layout of their department to encourage greater collaboration and knowledge-sharing both within the team and with other departments in the building.

Space Syntax was part of a design team led by Pilbrow & Partners Architects, that was appointed following an invited competition.

Client

The Francis Crick Institute

Year

2018

Role

Spatial layout advisor

Team

Pilbrow & Partners Architects

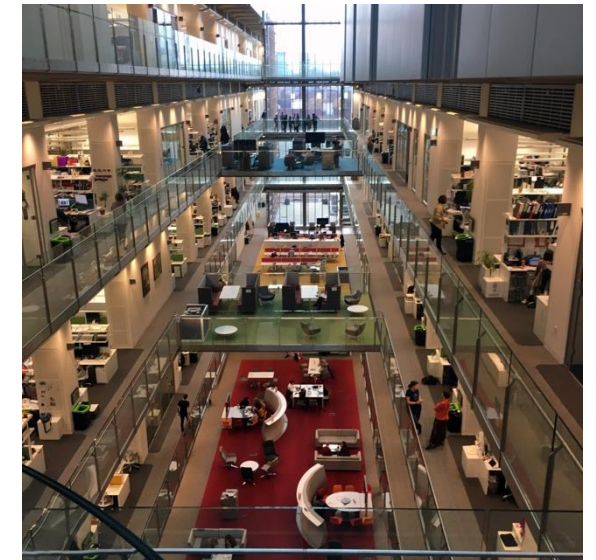
Key Features

Space utilisation survey and analysis

Design review

Detailed circulation analysis

Design option evaluation



Case study | Francis Crick Institute London, UK

Our contribution

At the competition stage, Space Syntax worked with the design team to develop, test and evaluate concept design proposals. Our work facilitated communication with key client groups and underpinned the team's success in securing the competition win.

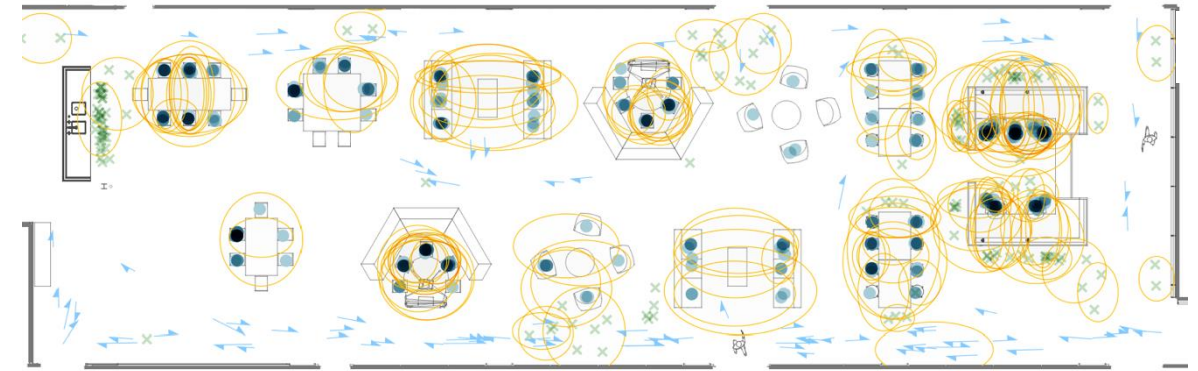
We then provided evidence-based design advice that assisted the client and design team in a number of key processes. First, we developed an understanding of how the day to day activities of the Institute were affected by the spatial layout design of the building. To do so, we undertook direct observations of user behaviour patterns and we constructed a Spatial Connectivity Model to study the building's spatial layout. Second, we developed and tested design proposals with the aim of simplifying and optimising the layout to consolidate movement flows and improve staff awareness and communication.

The outcome

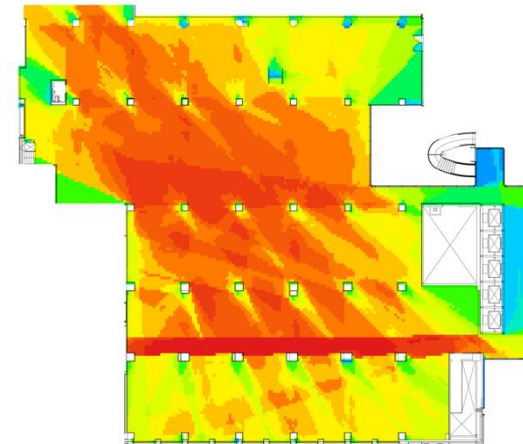
The proposed changes create an easy to wayfind layout with a clear hierarchy of circulation spaces. The design increases opportunities for formal and informal interactions between colleagues.

At the same time, the various 'static' functions in the floor - workstations, meeting rooms and open collaborative spaces - are distributed in line with their required exposure to movement and interaction: some more public, others more private.

A new central staircase integrates Operations with the other departments in order to foster opportunities for unplanned conversations across the building: interactions that represent the genesis of future innovation.

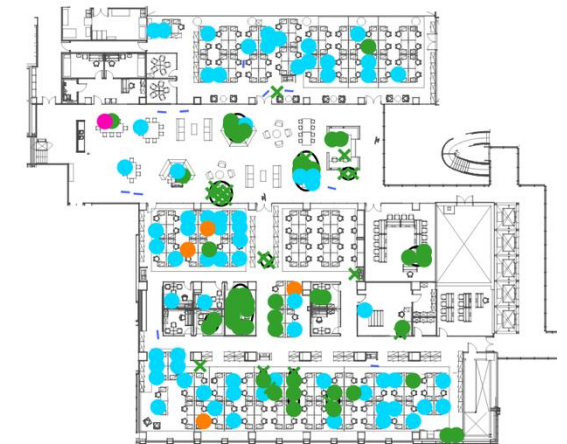


C. Diagram of staff interaction and occupation patterns in the central social space of the operations floor, based on the on-site surveys.



A. Spatial accessibility analysis of one of the layout options highlighting the activity potential of each space (previous page).

B. The central atrium of the Francis Crick Institute (previous page).



D. Spatial accessibility analysis of the operations floor showing patterns of inter-visibility and potential interactions.

E. Diagram of staff activity patterns on the operations floor.

Asset class | **Retail**

Asset class | Retail

Shaping footfall & product interactions to enhance customer experience & drive sales.

Our focus

- Customer movement flows
- Product interaction patterns
- Horizontal & vertical circulation design
- Store location to optimise passing trade & dwell
- Retail display design & product location to attract customer interactions
- Sales point location & queuing arrangements
- Wayfinding & signage strategies.

Value

- Linking spatial layout decisions to commercial performance
- Improving customer satisfaction & loyalty
- Enhancing product placement & merchandising
- Reducing congestion and friction.



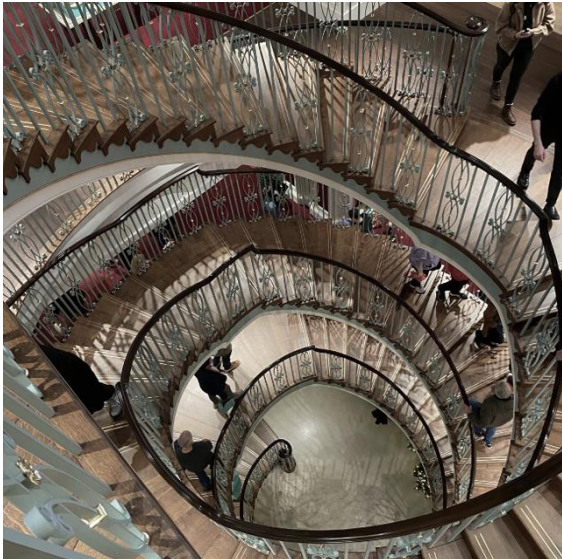
Double helix staircase at the Fortnum & Mason lobby in Piccadilly, London.

Retail | Selected projects

Fortnum & Mason, London | Fortnum & Mason

Customer behaviour analysis & design impact study

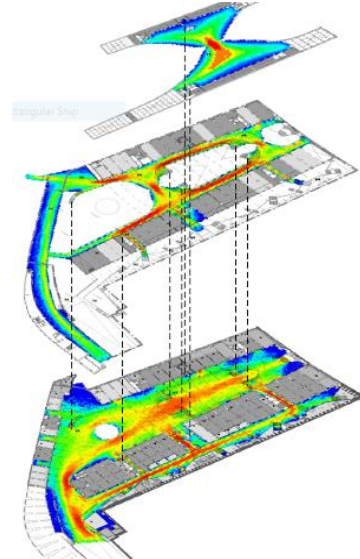
Analysis of customer circulation, product engagement & purchasing patterns in a landmark shopping environment to inform layout design & enhance retail performance.



Coal Drops Yard | Agent LLP

Strategic access & internal circulation design advice

Visitor flow and circulation assessments providing evidence to support the design of a major retail-led destination.



St David's Centre, Cardiff | Landsec

Visitor footfall forecast

Construction of a Pedestrian Forecast Model to predict visitor flows in a major extension of an existing city centre retail development.



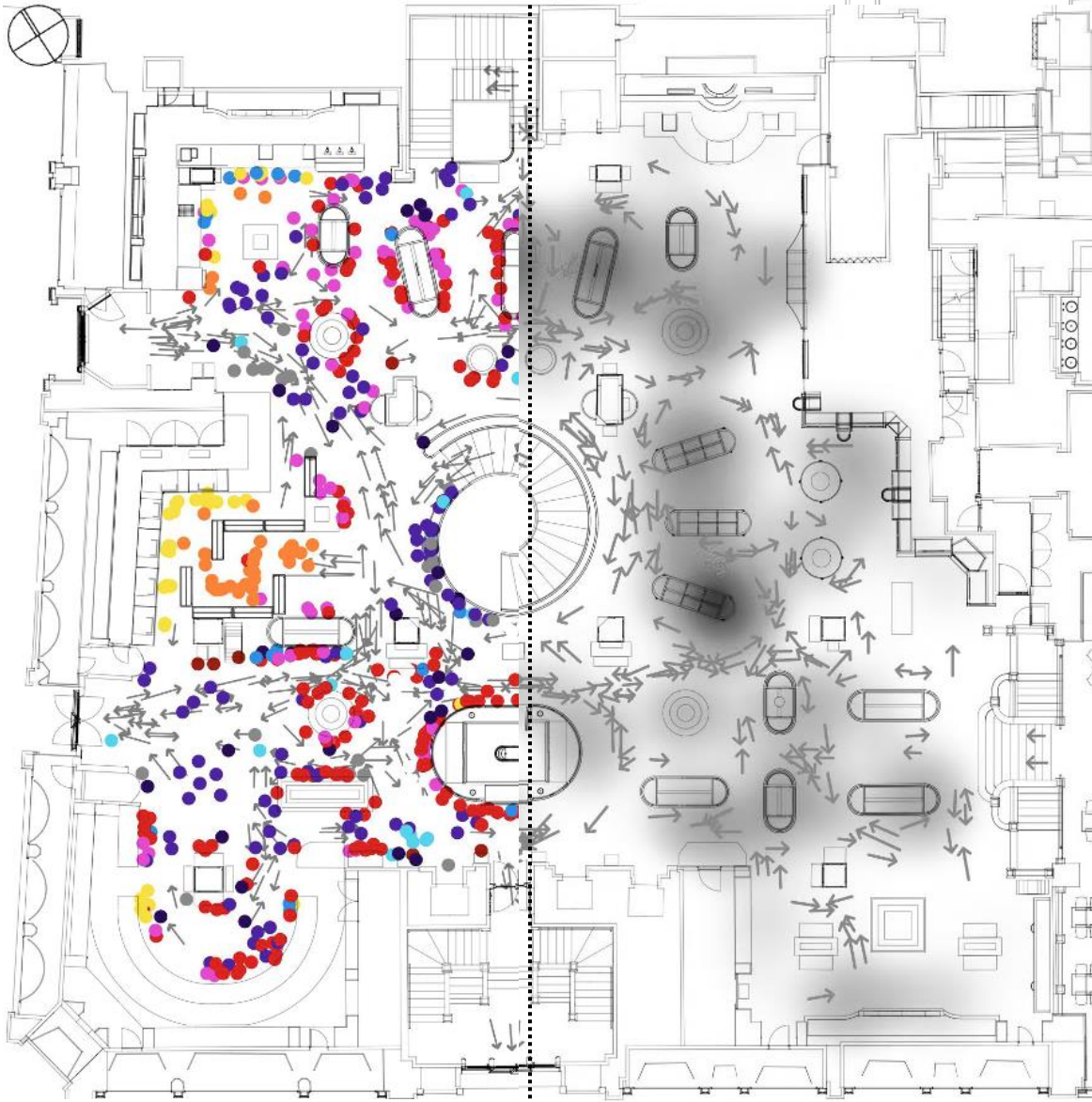
Trinity Centre, Leeds | Landsec

Circulation design advice & scenario testing

Evaluation of design proposals and development of circulation design improvements to ensure that a major shopping and leisure development integrates with its wider urban setting.



Case study | Fortnum & Mason London, UK



Analysis of customer circulation, product engagement & purchasing patterns in a landmark shopping environment to inform layout design & enhance retail performance.

Client
Fortnum & Mason

Year
2024

Role
Customer Behaviour & Spatial Strategy Adviser

Team
Ben Pentreath Ltd

Key Features
Customer Behaviour Analysis
Spatial Accessibility Modelling
Spatial Layout Design Advice
Customer Circulation Forecasting

The opportunity

In large, multi-level retail environments, spatial complexity can quietly undermine the customer experience. Visitors may struggle to find their way, miss key departments or feel uncertain navigating between floors. These issues can affect first-time visitors more acutely but they also shape how returning customers engage with the store over time, impacting brand appreciation and economic performance.

With a major store transformation project under development, the moment was right to better understand how customers interact with the store and to use that understanding to evaluate design proposals and forecast their impact on customer behaviour and sales patterns.

Space Syntax's appointment combined on-site behavioral observations with spatial analysis of the existing layout, including product visibility analysis. By linking qualitative insights with quantitative data, we were able to form a more complete picture of how layout, visibility and vertical access impact on customer navigation, circulation and product interaction.

This analysis provided a crucial foundation for future change, enabling the client to move forward with clearer, evidence-based strategies for improving circulation patterns throughout the multi-level store and, as a result, driving sales performance.

Case study | Fortnum & Mason London, UK

Our contribution

Space Syntax carried out a detailed assessment of how customers use and experience the store. We conducted on-site behavioural observations across all floors, recording how visitors entered, moved, paused, made decisions and interacted with the environment, products and each other.

We focused on circulation patterns, moments of hesitation and how customers engaged with staircases, floor entrances, departments, furniture, product categories and displays. This included documenting not only where people went, but how they navigated, whether they chose to continue, double back, or disengage.

These observations were linked to a Spatial Layout Model of the existing store, using visibility analysis to understand how sightlines and spatial structure influenced customer behaviour. By comparing what people did with what the space afforded, we could distinguish between operational challenges and spatial constraints that could then be addressed in the redesign proposals.

These methods allowed us to build a detailed evidence base: a spatial narrative explaining how the store worked from the customer perspective. We focused on uncovering the conditions that support confident movement and inclusive access, giving Fortnum & Mason a logical structure to justify future improvements, grounded in data and lived experience.

The outcome

By capturing how people move and behave, the findings of our work created a shared evidence base that was then used to support future design, wayfinding and operational decisions. The work highlighted where the spatial layout supported confident, intuitive movement and where friction points disrupted the customer journey.

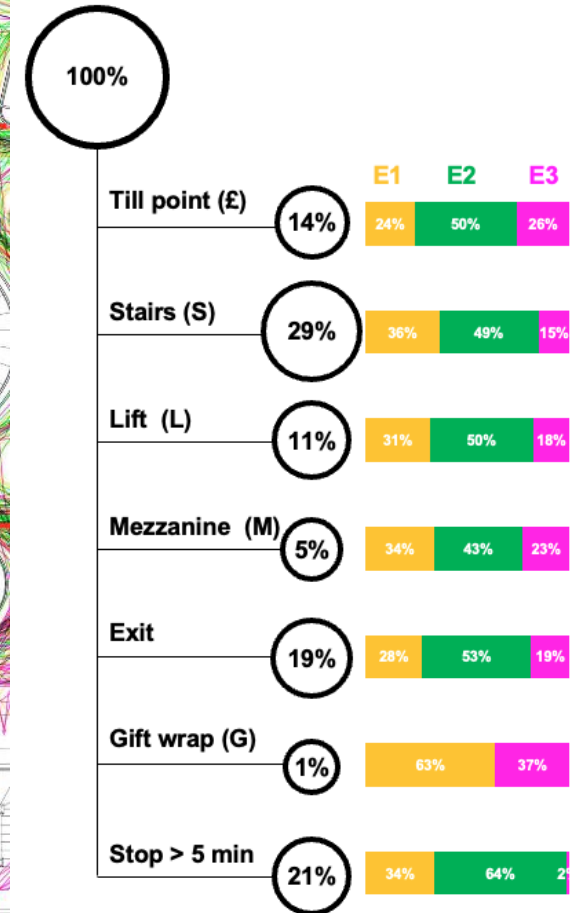
We used a Customer Behaviour Model to test and advise on the design of the proposed double helix staircase connecting from Lower Ground to Level 2, as well as a new Ground Floor mezzanine staircase. Our work also informed decisions about the use of different types of product fixtures and locations.

The insights from this work helped reframe spatial issues not as isolated problems but as part of a broader customer experience, shaped by visibility, flow and behavioural patterns.

The result is a store that flows more easily for its users, in which products are located optimally, enhancing both customer experience and sales performance.

A. Movement and activity snapshots (left) & heatmap of product related activities (right) (previous page).

B. Movement traces from the three entrances to the end points of their journeys.



Numbers are relativised by entrance count

Case study | Coal Drops Yard London, UK



Visitor flow and circulation assessments providing evidence to support the design of a major retail-led destination.

The opportunity

When Argent LLP was developing Coal Drops Yard, a new, multi-level retail destination within its wider King's Cross development, two factors were considered key to the project's success: first, simple, direct access from the surrounding area and second, an intuitive layout design to encourage customer circulation and dwell.

Space Syntax's involvement spanned two phases of the development process: the initial strategic design phase in 2015 when we worked alongside Heatherwick Studio and, following opening, a design optimisation phase in 2021 when Argent LLP reflected on the performance of the overall development project and produced new ideas to further enhance visitors experience, including greater connectivity with nearby Granary Square and Regent's Canal.

Client

Argent LLP

Year

2014-15 & 2021

Role

Public Realm Design advisor

Team

Heatherwick Studio

Key Features

Visitor flow assessment
Internal circulation assessment
Public realm design advice

Case study | Fortnum & Mason London, UK

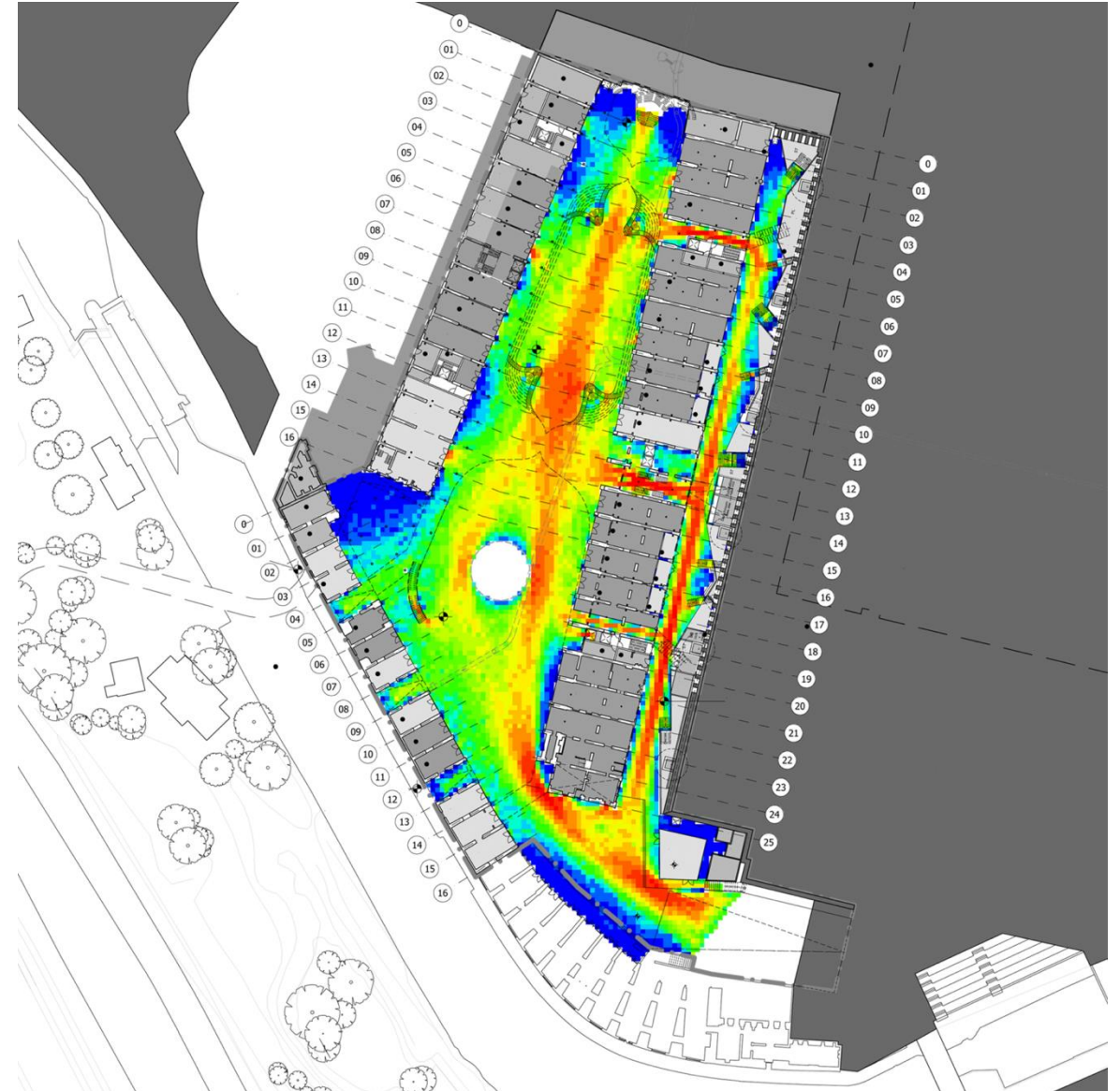
Our contribution

As part of the initial design process, Space Syntax analysed the site in terms of its accessibility within its wider urban context, and then reviewed the proposed design concepts. Visitor flow modelling was undertaken to test design proposals and recommend preferred options.

Following the opening of Coal Drops Yard, Space Syntax was commissioned again in 2021 to study customer circulation patterns and, equipped with this knowledge, to model a series of minor design changes that, as a whole, could significantly open up sight lines to and through the project, to improve visitor experience and retail engagement.

The outcome

Coal Drops Yard is a highly visited retail and entertainment environment, trading across multiple levels and providing a key commercial anchor in the wider King's Cross development. The design optimisations identified in 2021 have improved on the success of the initial project, demonstrating the importance of long-term design stewardship focused on the end user.



A. Coal Drops Yard © Heatherwick Studio (previous page).

B. Visitor flow simulation of the yard space.

Asset class | Healthcare

Asset class | Healthcare

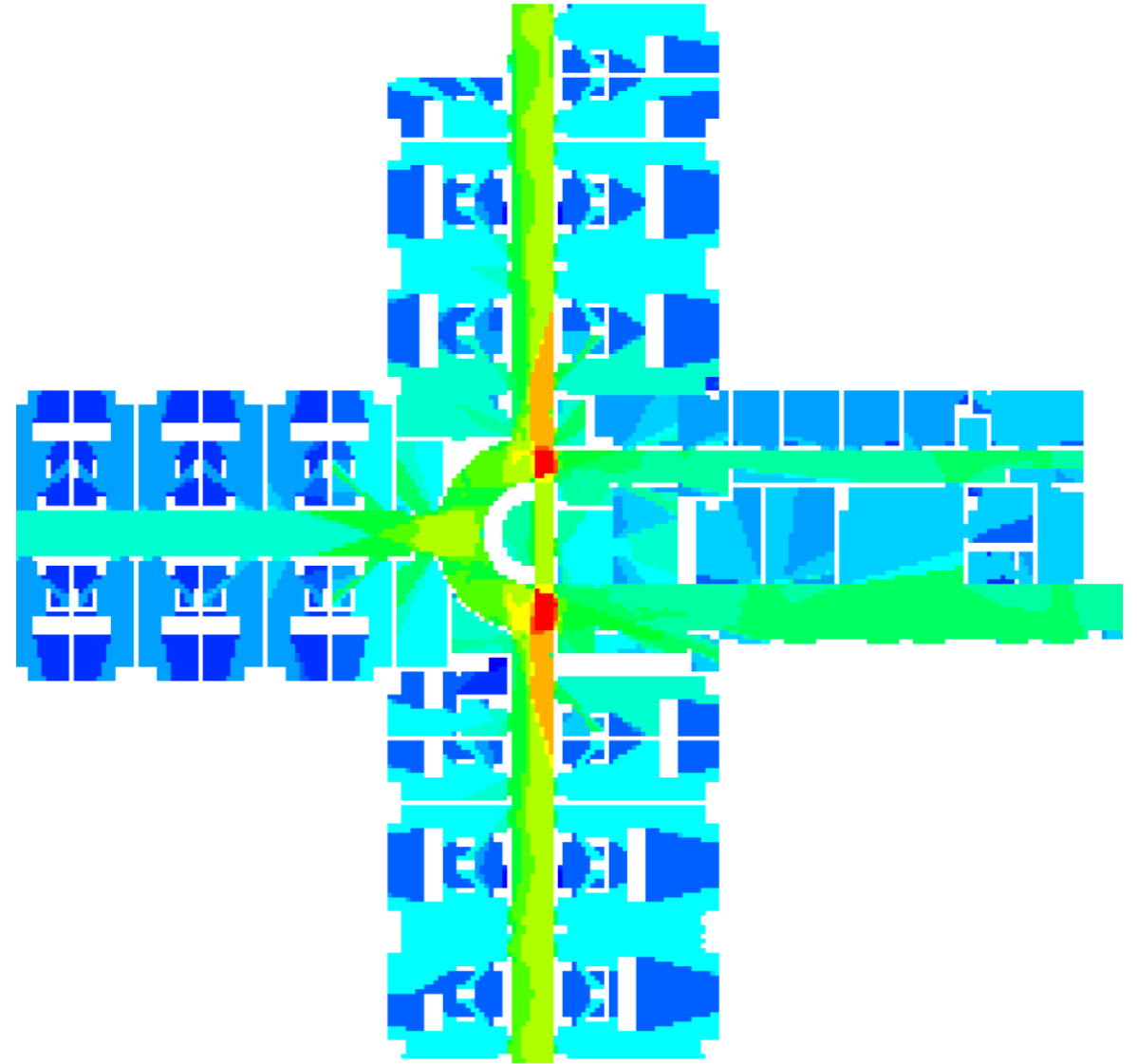
Managing critical user flows while ensuring patient safety, supervision & dignity.

Our focus

- Separation & interaction of patient, visitor & staff routes
- Visibility, oversight & blind spots
- Adjacencies between critical clinical functions
- Continuity of patient journeys from arrival to discharge
- Capacity & pressure under peak conditions
- User experience & comfort.

Value

- Reducing risk of operational failure
- Improving safety, supervision & efficiency
- Supporting smoother patient journeys & staff workflows
- Enabling evidence-based redesign without disrupting care
- Improving quality of experience of all users.



Spatial layout analysis of a ward at the Hillingdon Hospital, London.

Healthcare | Selected projects

Hillingdon Hospital Pilot | The National Patient Safety Agency

Ward layout study

Evaluation of ward layout for delivery of care, focussing on the impact of 100% single room accommodation in hospital wards.



Bristol Southmead Hospital | University of Manchester

Hospital layout & circulation study

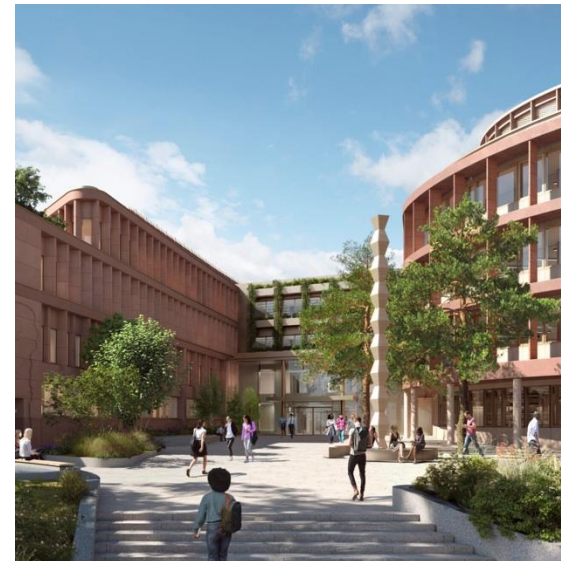
Creation of design principles & spatial models to develop & test emerging proposals that encourage interaction & innovation.



Warneford Park Mental Health Campus | Oxford NHS Foundation Trust

Campus-wide coherence

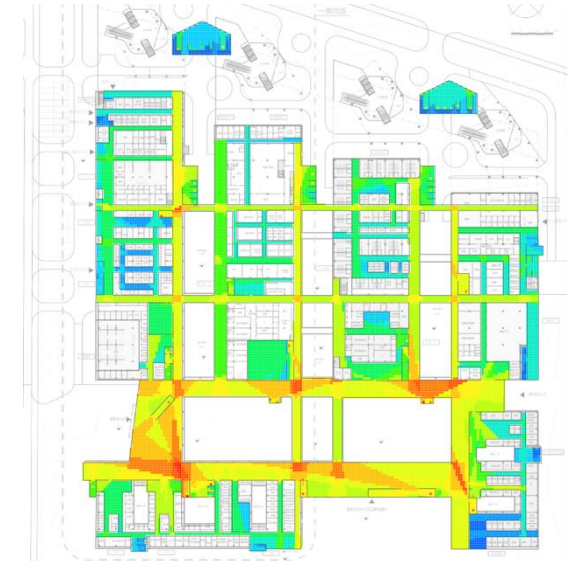
Development of spatial strategies integrating healthcare, research & teaching functions to create a high-quality, unified campus environment.



Hospital, China | Beijing Institute of Architectural Design

Hospital layout optimisation study

Development & testing of a Circulation Model to evaluate & optimise the proposed hospital layout, enhancing spatial accessibility, wayfinding & overall user experience.



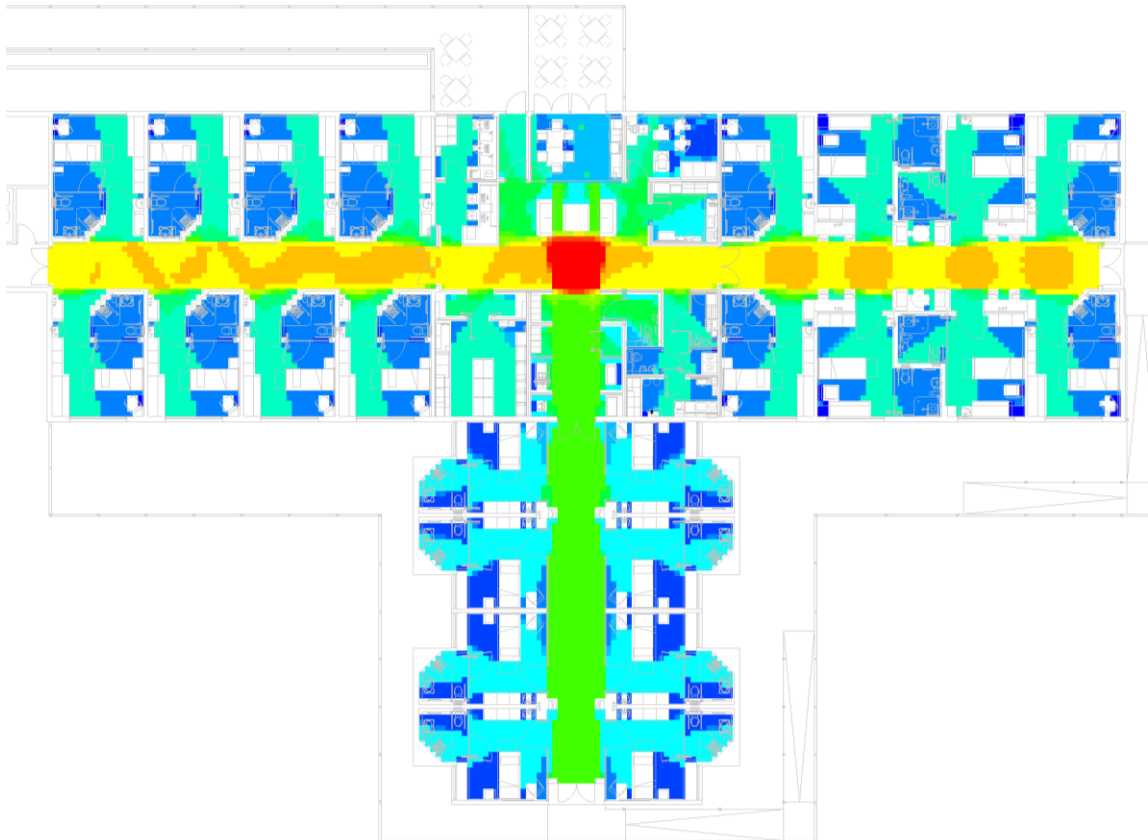
Case study | Hillingdon Hospital London, UK

Evaluation of ward layouts for delivery of care, focusing on the impact of 100% single room accommodation in hospital wards.

The opportunity

Space Syntax was commissioned by the Department of Health and the National Patient Safety Agency to join an interdisciplinary research team investigating the impact of 100% single room accommodation in hospital wards on patient care, and specifically to evaluate the effect of spatial layout and room configuration on staff working practices

Built as a temporary structure in the car park of Hillingdon Hospital, the Bevan Ward research project offered a unique opportunity to test examples of best practice in ward design. The 24-bed, T-shaped ward had three ensuite 8-bed clusters that shared a central support zone with reception, kitchen and social areas. Each of the three wings had been designed to test different room configurations based on the location of ensuite facilities: standardised, courtyard and outboard.



Client

Department of Health National Patient Safety Agency

Year

2010

Role

Spatial Strategy & Circulation Consultant

Team

York Health Economics Consortium

Key Features

Baseline study

Post-occupancy surveys

Case study | Hillingdon Hospital London, UK

Our contribution

The analytic process undertaken by Space Syntax comprised:

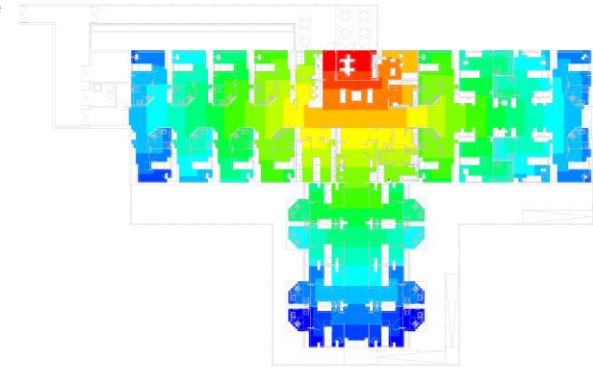
- observation of occupation and interaction patterns of patients, visitors and staff;
- nurse travel paths and interaction patterns;
- spatial accessibility analysis;
- room and bed-head visibility;
- walking distances;
- natural surveillance & visual field analysis;
- structured interviews and questionnaires with key members of staff.

In order to establish a comparative baseline, the first part of the research used four existing wards of various configurations and accommodation types as a case study. These case studies included two wards within Hillingdon hospital, one of which was then relocated to the newly built Bevan ward.

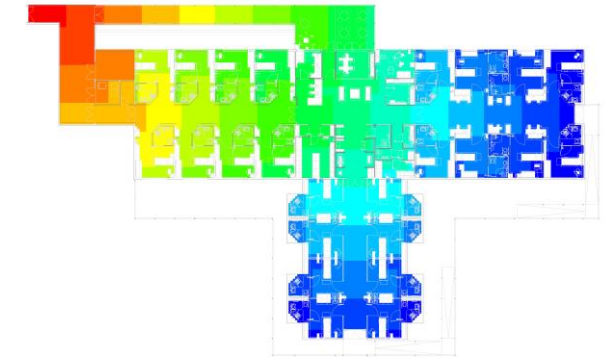
The second stage applied the same methodology to the Bevan ward, with two sets of observations studies carried out. The first was undertaken in February 2009, a month after the Bevan ward was commissioned as a working ward, with a second follow-up on site surveys in December 2009 and January 2010.

The outcome

Single-room accommodation is likely to provide a better patient experience than that offered in multi-bed wards as long as key conditions are achieved: first, the spatial layout design of the ward and second, the adaptation of working practices to suit the new layout. For example, the success of the Bevan ward was only secured after the Charge Nurse reorganised certain routines that, while successful in multi-bed bays, were inefficient in a single-room environment.



A. Spatial accessibility model of the pilot ward highlighting the intersection of corridors as a strategic location. Visitor entrance & the reception are located adjacent to this strategic point (previous page).



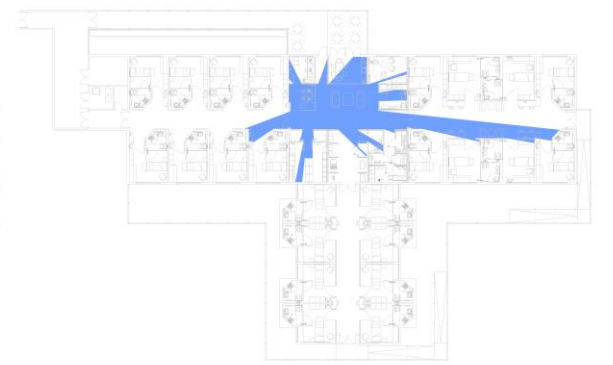
B. Walking distance from the visitor entrance for the pilot ward.



C. Walking distance from the staff entrance for the pilot ward, demonstrating a deeper structure compared from the one from the visitor entrance.

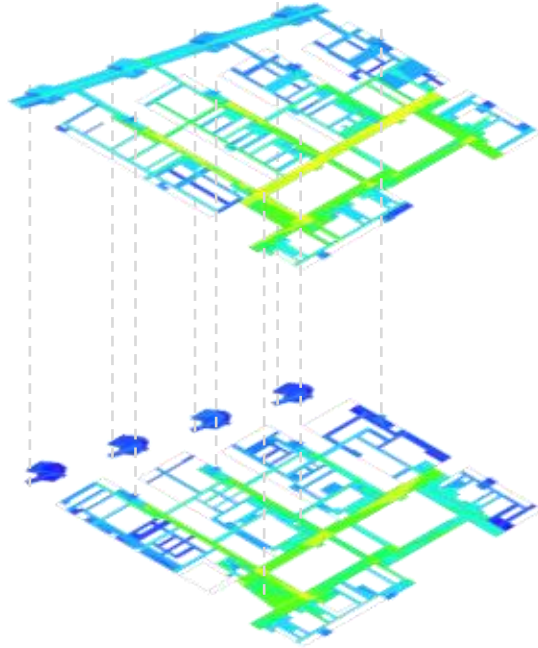


D. Visibility from each bedroom (patient's bed head), showing the different spatial properties between the three clusters.

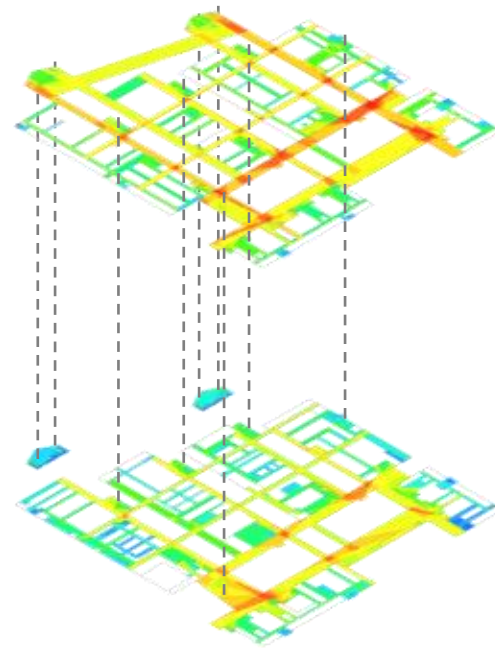


E. Visibility from the main reception, which is limited to the support zone & does not stretch into each bedroom cluster.

Case study | Hospital China



A. Spatial accessibility of the proposed layout.



B. Spatial accessibility of the optimised layout.

Optimisation of horizontal & vertical circulation design to improve wayfinding & user experience in a major new hospital.

Client
University Hospital

Year
2020

Role
Strategic design advisor

Team
Beijing Institute of Architectural Design

Key Features
Spatial analysis
Proposed option testing

The opportunity

Space Syntax was asked to undertake a rapid, high-level review of the proposed designs with the aim of identifying opportunities to improve the horizontal and vertical circulation of staff, patients and visitors.

Our contribution

We constructed a Hospital Circulation Model of the two main floors of the hospital, measuring levels of Spatial Accessibility in order to provide an initial indication of likely flow densities. The modelling also identified pinch points where over-crowding was likely, as well as spatial 'dislocations': places where the spatial layout was overly complex and therefore likely to lead to poor wayfinding.

Based on the results of this analysis, we identified a series of design amendments to the spatial layout of the building as well as the location of vertical circulation points. The Hospital Circulation Model was used to test each amendment individually and in combination, using a scoring system to rank different scenarios.

The outcome

Undertaken in just over a week, our work delivered critical insights at a key point in the design process, targeting realistic amendments to the designs and illustrating the benefits of these for overall hospital performance.

Asset class | Cultural

Asset class | Cultural

Creating coherent visitor journeys & meaningful engagement with museum & gallery collections.

Our focus

- Visitor circulation & spatial sequencing
- Visibility, sightlines & visual connections
- Wayfinding & decision-making points
- Capacity, comfort & visitor distribution.

Value

- Improving visitor experience & satisfaction
- Strengthening spatial & curatorial narratives
- Balancing visitor distribution & reducing congestion
- Supporting confident design, planning & phasing decisions.



The Sackler Courtyard at the V&A, London, providing a new entrance, public space & underground gallery.

Cultural | Selected projects

Natural History Museum | Natural History Museum

Visitor circulation strategy

Design of a Visitor Circulation Strategy to optimise flows, increase engagement with the collection & improve overall museum experience.



The V&A Exhibition Road Quarter | Victoria & Albert Museum

Visitor circulation & design impact study

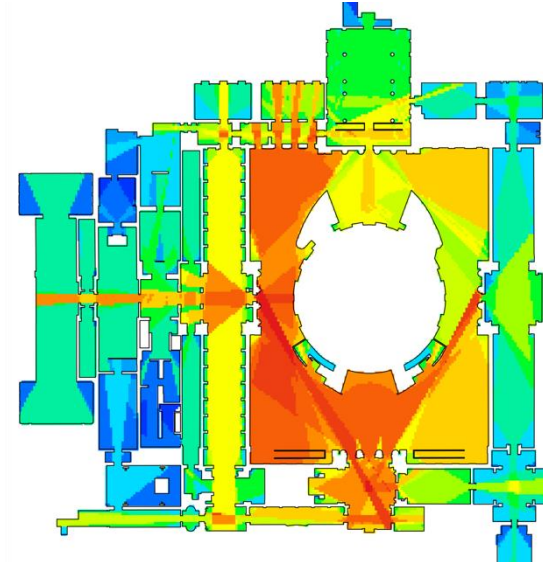
Analysis of existing visitor flows and development of future visitor flow scenarios to test the impact of design proposals on wayfinding and capacity.



British Museum | The British Museum

Visitor circulation & museum layout study

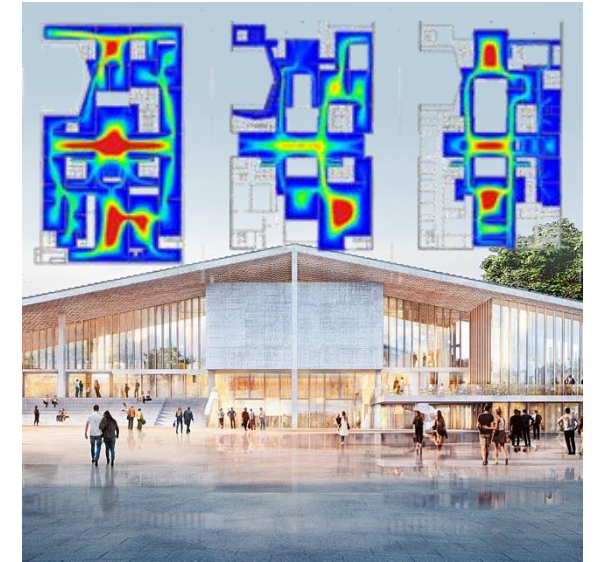
Reimagining how visitors move through & experience the Western Range with enhanced visibility & improved wayfinding to create an intuitive & sociable experience.



Museum of 20th Century Berlin | Staatliche Museen zu Berlin

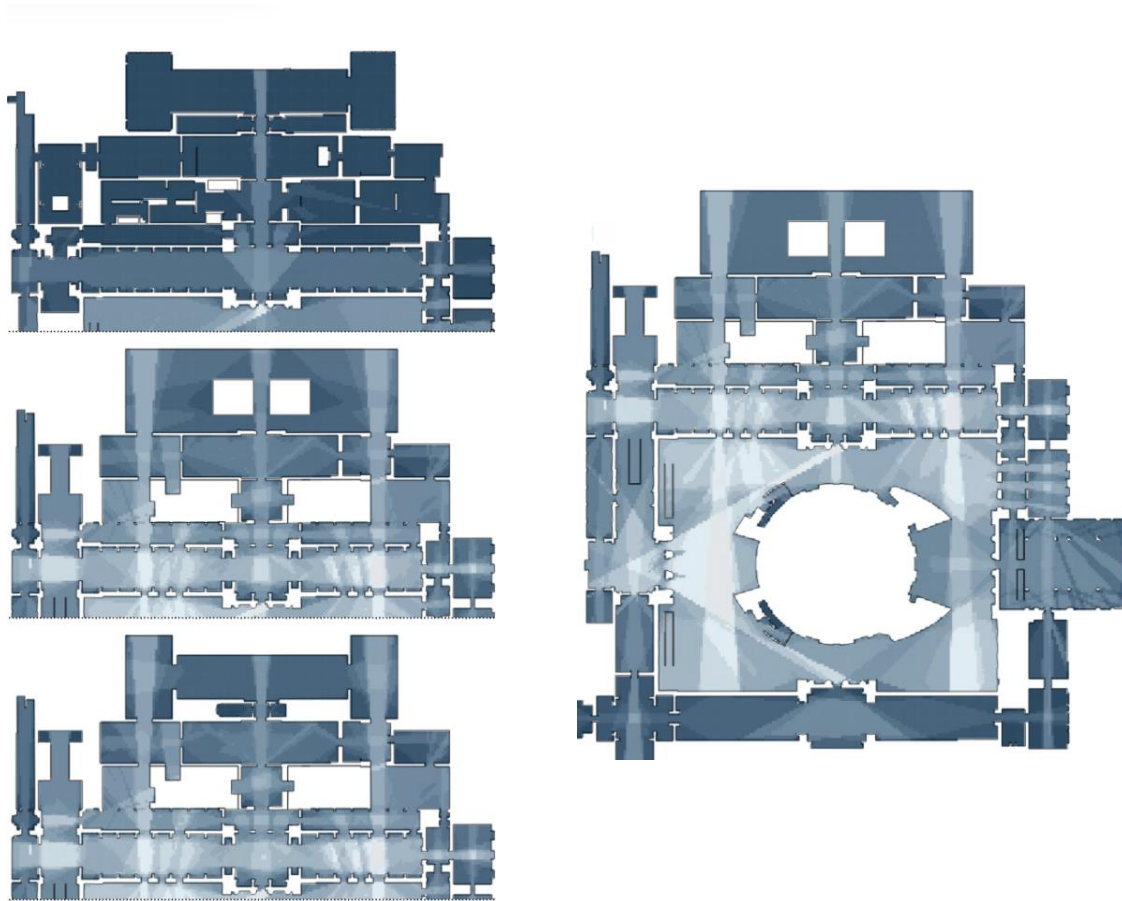
Visitor circulation & design impact study

A vibrant new landmark which engages with its surroundings and strengthens connections across Berlin's cultural district.



Case study | British Museum London, UK

Reimagining how visitors move through & experience the Western Range with enhanced visibility & improved wayfinding to create an intuitive & sociable experience.



The opportunity

The Western Range is one of the most architecturally significant but spatially disconnected parts of the British Museum. Despite housing important galleries, the rooms are difficult to navigate, with poor visibility, fragmented circulation and limited access between levels. As a result, visitors are often disoriented or bypass important spaces altogether, leading to uneven footfall and a disrupted museum experience.

The British Museum's competition called for a redesign that would make the Western Range more appealing to a broader audience. Our team responded by focusing on the underlying spatial challenges of intervisibility, legibility, accessibility and inclusion and identified a strategic opportunity to improve connections to both the Great Court and the main entrance, making the Western Range a more integrated part of the museum's primary circulation.

This meant clarifying key routes, enhancing sightlines, reconnecting isolated galleries and making vertical movement more intuitive. We tested multiple design iterations using spatial layout analysis tools to assess and refine proposals. This helped the team identify the most effective strategy for unlocking the potential of the Western Range as a vital, visible and welcoming part of the museum.

Client

Eric Parry Architects | British Museum

Year

2024

Role

Spatial Strategy & Movement Analysis

Team

Eric Parry Architects | Jamie Fobert Architects
Purcell Heritage Consultants
Max Fordham | Price & Myers

Key Features

Visitor Circulation Design Strategy
Spatial Layout Analysis
Exhibit Visibility Analysis
Design Testing & Optimisation

Case study | British Museum London, UK

Our contribution

As Spatial Strategy Consultants within Eric Parry Architects' competition team, Space Syntax provided advice to support the redesign of the Western Range. Our work focused on improving visibility, accessibility and circulation and helping the design team test and refine ideas through a spatial performance lens.

We used Spatial Layout Analysis to assess how proposed interventions such as new openings, stair relocations and gallery connections would affect sightlines, connectivity and visitor flow. Each option was evaluated against the existing layout and comparatively across scenarios to identify the clearest and most legible outcomes.

We supported a strategy to integrate the Western Range more effectively into the museum's primary circulation by transforming a fragmented space into one that felt intuitive, inclusive and well connected to the rest of the museum.

Our analysis also extended to the wider urban context, assessing access from surrounding streets and transport hubs to ensure internal improvements aligned with external arrival patterns. This evidence-led approach helped the team understand the spatial impact of design decisions and strengthened the ultimate competition submission with clear, data-backed insights focused on people and movement.

The outcome

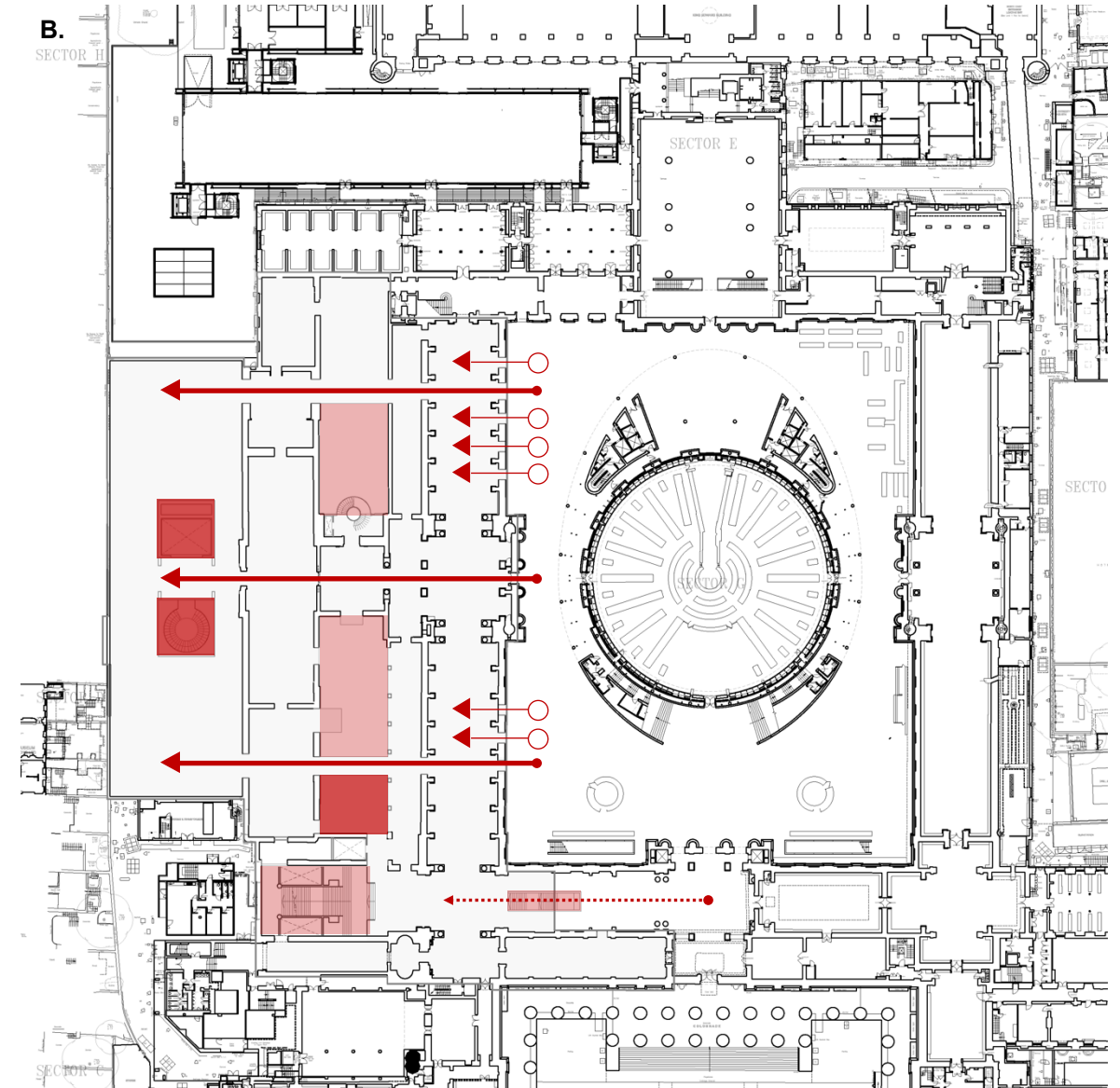
The final competition proposal presents a clear strategy to transform the Western Range into a more legible, accessible and integrated part of the British Museum. Through new connections and improved visibility, the design creates a more intuitive visitor experience and opens up previously disconnected spaces, both horizontally and vertically.

Our spatial analysis helped guide the selection of interventions with the greatest impact on circulation and wayfinding, while remaining sensitive to the building's architectural and operational context. By comparing multiple design scenarios, we helped the team prioritise moves that delivered the most benefit to visitors with the least disruption.

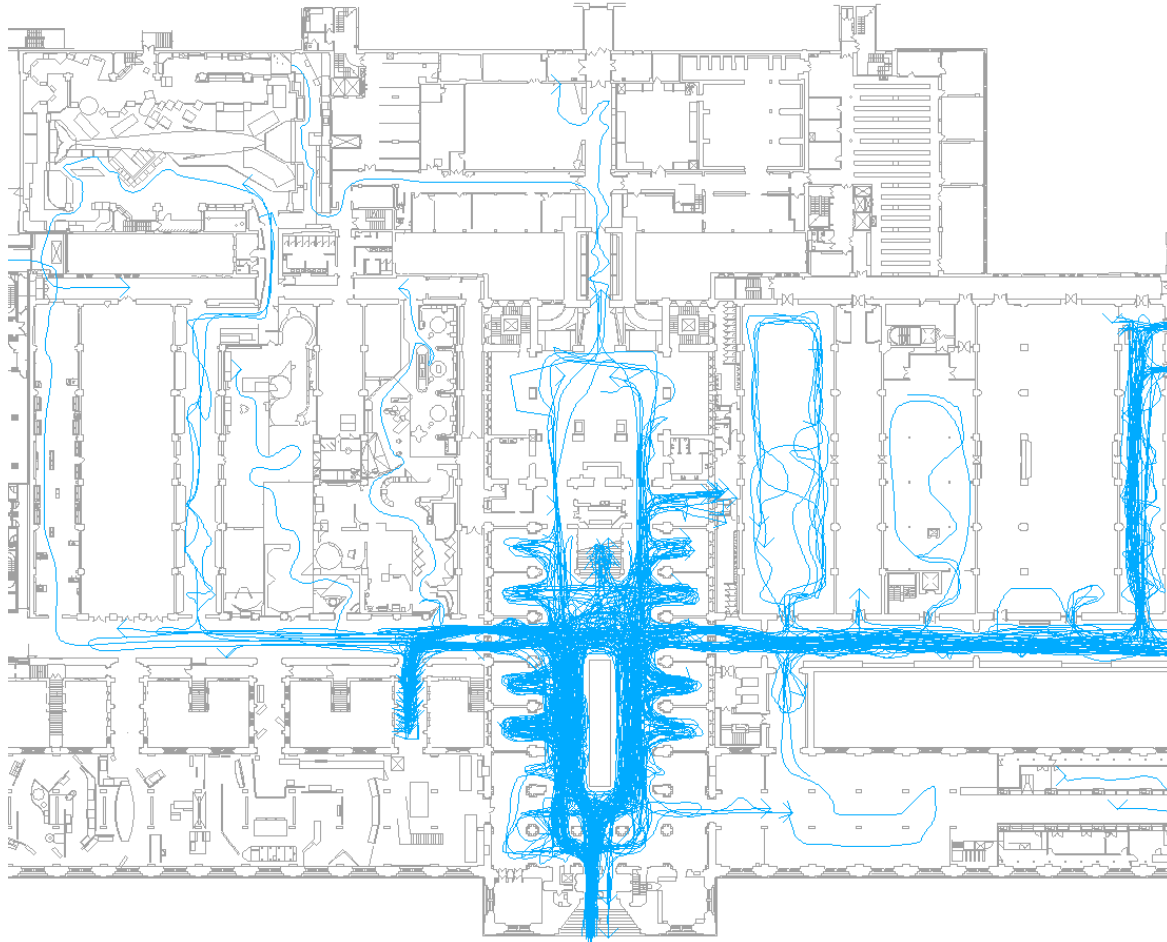
The preferred option allows previously overlooked areas to become part of the visitor journey, helping to distribute footfall more evenly and support a more inclusive, stimulating and coherent museum experience that better reflects the scale and richness of the collection as a whole.

A. Spatial Layout Analysis of existing & proposed plans for the Western Range (previous page).

B. Key spatial moves diagram.



Case study | Natural History Museum London, UK



Design of a Visitor Circulation Strategy to optimise flows, increase engagement with the collection & improve overall museum experience.

Client
National History Museum

Year
2013

Role
Visitor circulation advisor

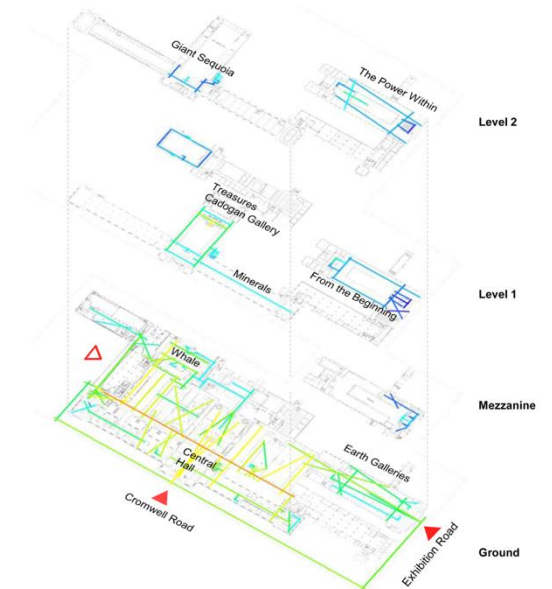
Team
The Urban Engineering Studio

Key Features
Building Baseline Study
Design option development & evaluation

The opportunity

The Natural History Museum is a world-class visitor attraction and a leading science research centre. In 2013, the Museum attracted over 5 million visitors, and this figure was targeted to increase significantly in future years.

Space Syntax was commissioned to create a Visitor Circulation Strategy that would not only accommodate the anticipated growth but also address issues of overcrowding in some parts of the building and underuse in others. In doing so, the strategy needed to recognise the historic sensitivity of the Museum's built fabric.



Case study | Natural History Museum London, UK

Our contribution

Creation of the Visitor Circulation Strategy followed a two-stage, evidence-based approach:

Building Baseline Study

We undertook a survey of visitor movement patterns and used this, in combination with spatial layout modelling, to construct a Visitor Circulation Model of the building. We worked with a specialist sub-consultant to study the building's historic construction. By combining the analysis, we established a schedule of Opportunities and Constraints to guide future change.

Spatial layout design advice

Informed by the baseline studies, we developed a series of targeted interventions aimed at simplifying the overall building layout. Together, these created a Visitor Circulation Strategy for the Museum that was tested and optimised in the Visitor Circulation Model, all in close collaboration with the Museum.

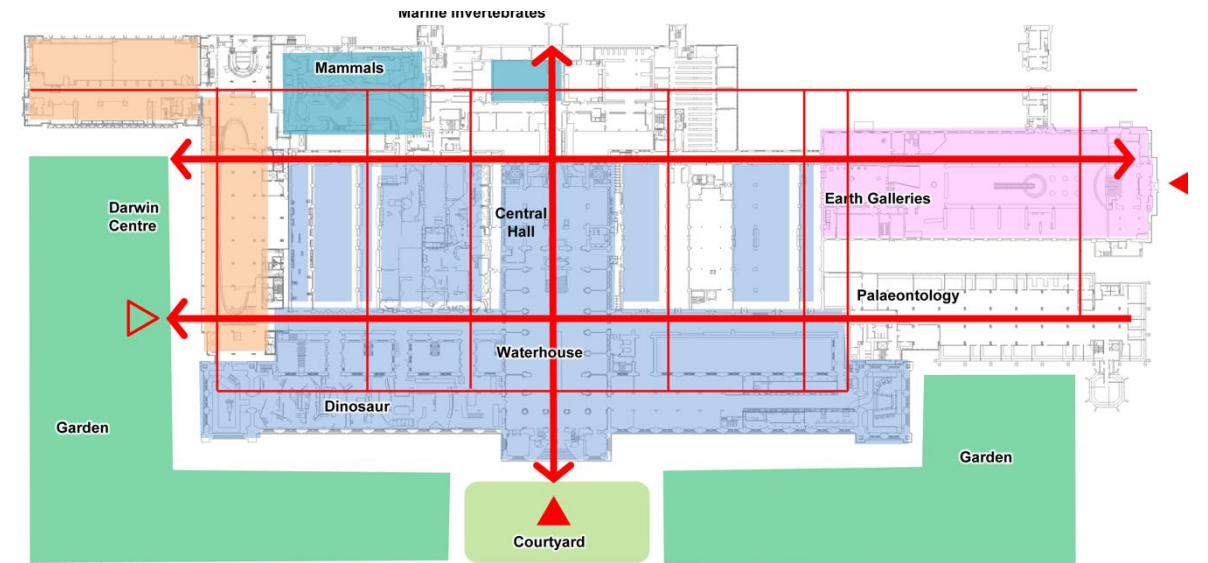
The outcome

Many of Space Syntax's recommendations were subsequently implemented, creating a more connected and accessible experience for all. In 2026, the Natural History Museum announced annual visitor figures of 7.1 million, making it the UK's most visited tourist attraction.



A. Spatial accessibility analysis of the visitor circulation spaces of the Museum, highlighting key structures composed of the Central Hall & Dino Way/Fossil Marine Reptiles & segregation of the Earth Galleries, the North Buildings & the Darwin Centre (previous page).

B. Visitor traces from the Cromwell Road Entrance & the Exhibition Road Entrance.



C. Visitor circulation strategy.

Case study | Museum of the 20th Century Berlin, Germany



A vibrant new landmark which engages with its surroundings and strengthens connections across Berlin's cultural district.

The opportunity

Designed by Herzog & de Meuron, the Museum of the 20th Century is located near Potsdamer Platz, one of Berlin's key transport hubs and a major destination within the city centre. Conceived as a catalyst for improving the surrounding public realm, the museum enhances links between important cultural institutions, including the New National Gallery and the Berliner Philharmonie. The project forms part of a broader urban regeneration strategy aimed at revitalising this area of Berlin, which underwent significant destruction during the Second World War and fragmentation following the subsequent division of the city.

Client

HBA

Year

2019

Role

Visitor Behaviour & Spatial Strategy Advisor

Team

Herzog & de Meuron

Drees & Sommer

Key Features

Spatial Layout Analysis Design Advice

Pedestrian Movement Forecasting

Customer Behaviour Analysis

Case study | Museum of the 20th Century Berlin, Germany

Our contribution

Space Syntax and Drees & Sommer collaborated closely with the project team to produce a comprehensive assessment of spatial connectivity, visitor movement patterns, desire lines and spatial capacity.

The objective of the analysis was to understand how visitors would navigate the building and interact with its spaces. To support this process, Space Syntax developed an agent-based Visitor Circulation Model capable of simulating visitor movement under a range of scenarios. The model was used to test design performance, identify opportunities for improvement, and quantify the impact of proposed interventions on visitor experience.

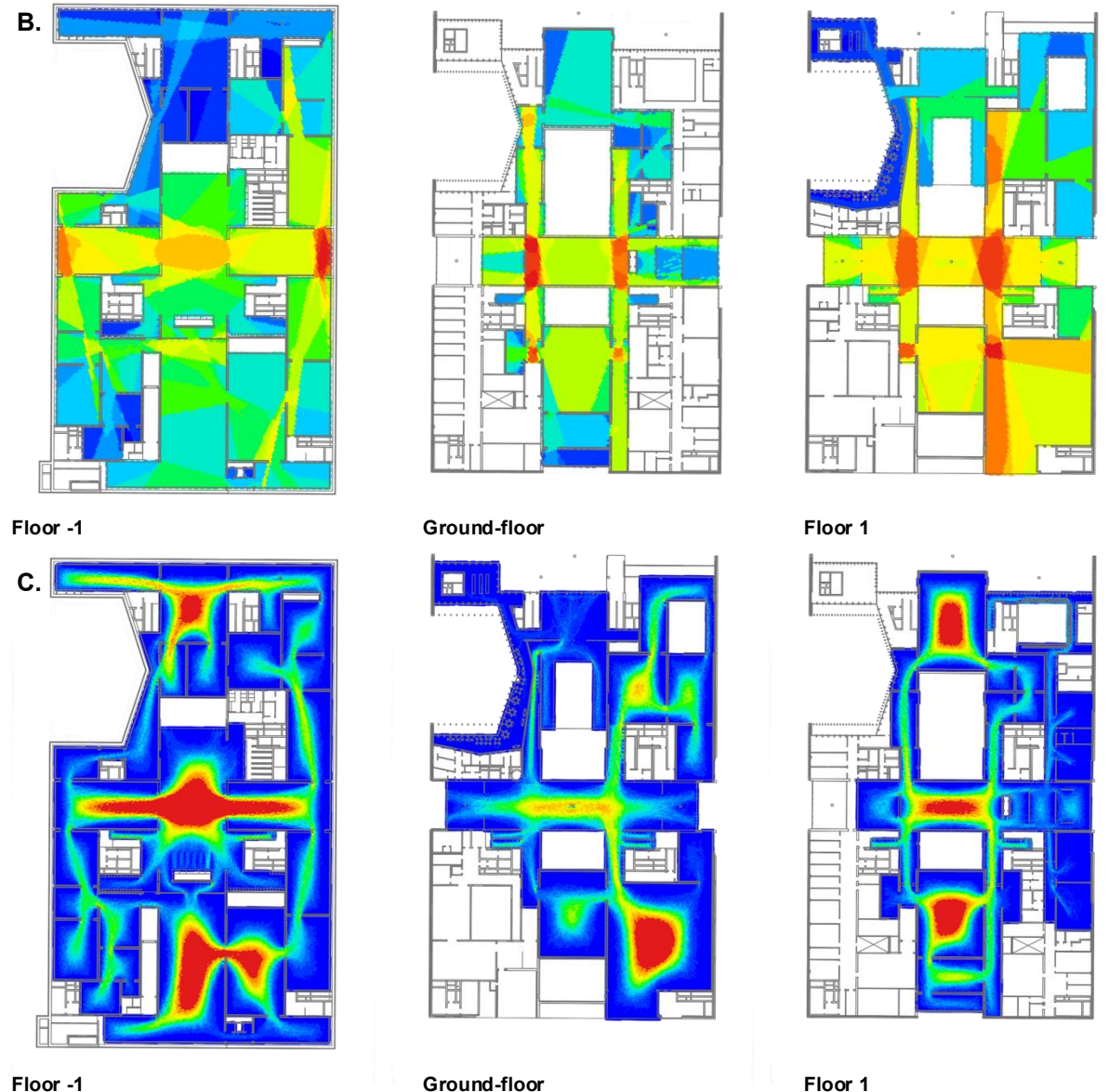
The outcome

Informed by our analysis, the final design creates a genuinely accessible building whose principal internal spaces extend and complement the surrounding public realm. The ground floor functions as a continuation of the external urban environment, strengthening the building's relationship with the city and encouraging public use.

The internal layout is organised around a central space that provides a clear framework for movement and wayfinding across all floors. The exhibition areas are arranged as a continuous, legible circuit, creating a varied and coherent visitor experience.

The analysis identified a clear hierarchy of spatial roles within the building. The ground floor has the most public profile and is likely to attract higher levels of through movement and casual visitors. In contrast, Level -1, which accommodates the main exhibition spaces, is expected to experience the highest levels of occupancy and visitor activity. Overall, the design establishes a clear and intuitive hierarchy between public and more private spaces, aligned with their intended function and spatial performance.

The museum is currently under construction and is scheduled to open in 2029.



Asset class | Education

Asset class | Education

Supporting informal interaction alongside structured learning.

Our focus

- Arrangement of classrooms, common spaces & public areas
- Clarity & hierarchy of circulation routes
- Encouragement of informal interaction & learning across disciplines
- Avoidance of isolated, unsupervised & underused spaces.

Value

- Supporting the delivery of formal & informal education
- Encouraging collaboration, creativity & innovation
- Enhancing staff & student satisfaction
- Fostering safety & security for all users.



Atrium of the Manchester Institute of Biotechnology, an interdisciplinary research institute.

Education | Selected projects

UCL East Masterplan | UCL Estates

Masterplan & public realm design advice

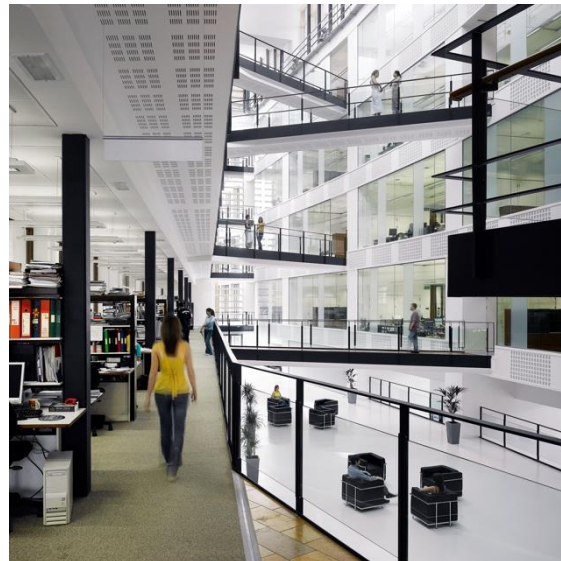
Spatial layout analysis and design impact modelling to evaluate and optimise early plans for a new campus in the Queen Elizabeth Olympic Park, London.



Manchester Institute of Biotechnology | University of Manchester

Design advice focusing on interaction & communication

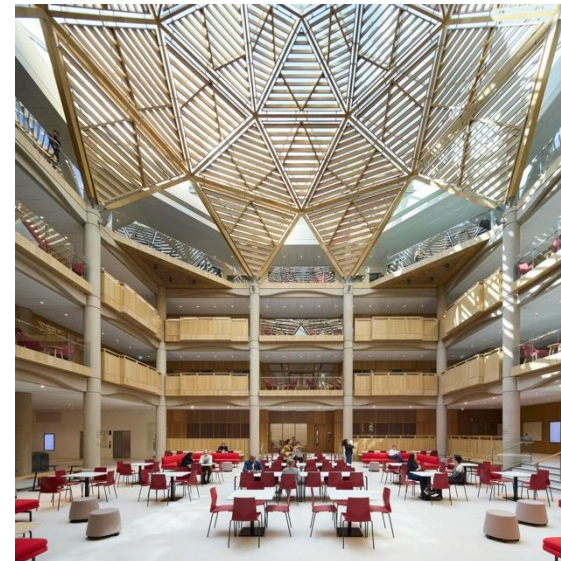
Evaluation of design proposals and provision of spatial layout design advice aimed at improving informal communication, interaction and innovation between research scientists.



Schwarzman Centre for the Humanities | The University of Oxford

People flow & capacity analysis

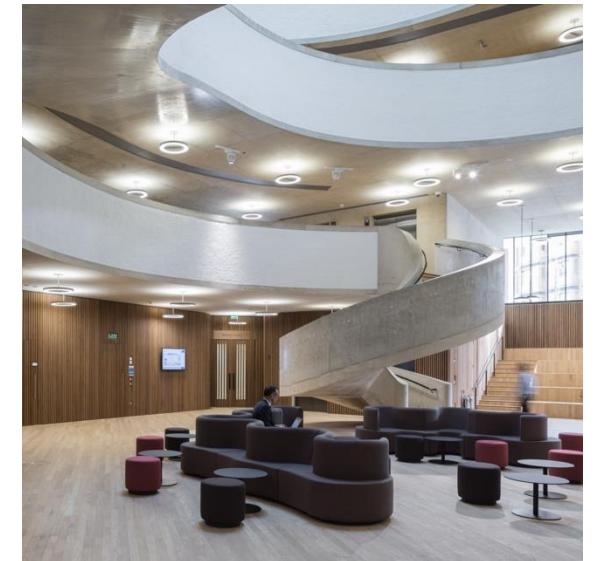
Spatial layout design advice for a new building comprising performance spaces (including a 500-person concert hall, a 250-person lecture theatre and an experimental performance lab) and several teaching spaces.



Blavatnik School of Government | Blavatnik School of Government

Building use analysis & optimisation strategy

Post-occupancy analysis of movement patterns and event programming to establish the potential of new communal areas to enhance the social performance of the building.



Asset class | **Government**

Asset class | Government

Balancing public access, security & day-to-day institutional operation.

Our focus

- Spatial organisation of public, semi-public & secure domains
- Movement patterns of multiple user groups with different access rights & time profiles
- Legibility & wayfinding as tools for institutional clarity & organisation
- Hierarchy & sequencing of entrances, reception areas & internal routes.

Value

- Enabling institutions to operate efficiently while remaining accessible to the public
- Reducing friction between access, control & internal operations
- Supporting clear, predictable processes & user journeys for staff, officials & visitors
- Reducing operational delays & security-related conflicts
- Reinforcing transparency, authority & public trust through spatial clarity.



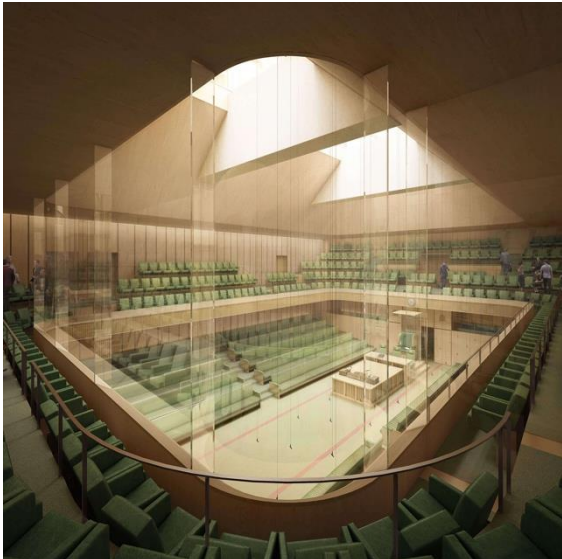
Visualisation of the temporary house of chambers, CGI © AHMM.

Government | Selected projects

Richmond House | Corporate Office of the House of Commons

*Evidence-based workplace &
masterplan design advice*

Movement flow forecast and design advice to support design proposals for Parliament's Northern Estate, including a temporary House of Commons Chamber and associated facilities along workspace for 650 MPs and staff.



Berlin Wilhelmstrasse | Drees & Sommer

*Visitor flow analysis & strategic
circulation strategy*

Visitor flow analysis & strategic circulation strategy for the extension of a government ministry campus across Wilhelmstrasse in Berlin, which will include offices and conference facilities, for the German Government.



Palace of Westminster Visitor Access | Houses of Parliament

*Visitor access, security design &
capacity analysis*

Visitor access, security design & capacity analysis to support the development of a new visitor access strategy and the design of related buildings and spaces.



Contact us

81 Rivington St
London
EC2A 3AY

+44 20 7400 1320

london@spacesyntax.com
www.spacesyntax.com